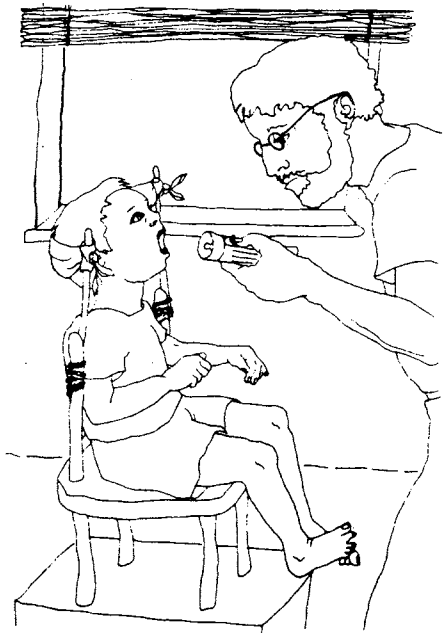
Where There Is No Dentist

by Murray Dickson

updated and expanded
with information about HIV and AIDS
by Richard Bebermeyer,
Martin Hobdell and Gene Stevenson

Introduction by David Werner,
author of *Where There Is No Doctor*



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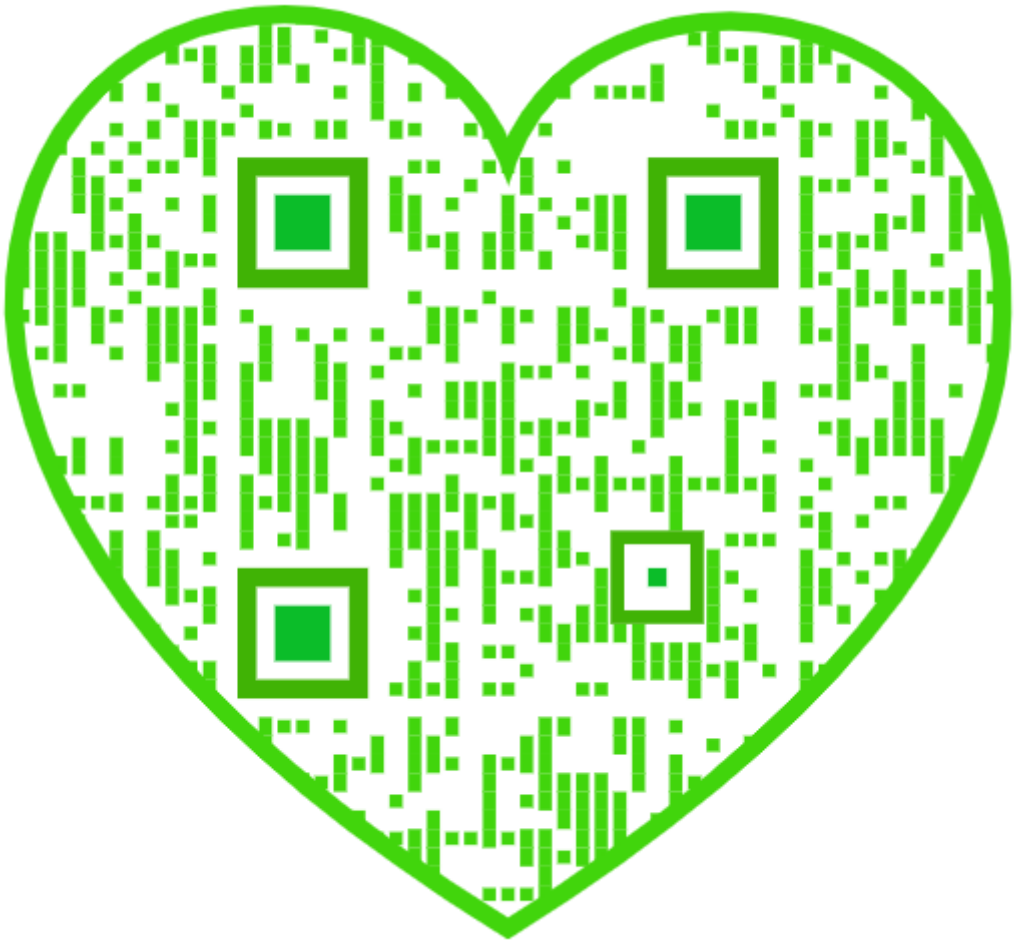

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THANKS

Where There Is No Dentist, updated edition, 2010

Thanks from Hesperian

We continue to be inspired by Murray Dickson and his tireless efforts to encourage health and dental promoters and community members to respond self-reliantly to their health needs. A few years ago, Murray introduced us to Richard Bebermeyer, Martin Hobdell, and Gene Stevenson, whom we thank for volunteering their time to write and develop the manuscript for Chapter 12 in this book, "HIV and Care of the Teeth and Gums." That material was originally published in 2002 and distributed as a supplement to the previous edition of *Where There Is No Dentist*. We also thank Jane Maxwell, who edited the supplement with assistance from Darlena David, Julie Gerk, and Todd Jailer.

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Thanks from Murray Dickson, 1983

Where There Is No Dentist is here to fill a need. To many people, it has seemed that the existing books about dental care were either too incomplete or too complicated. If this book fills that need, it is only because a number of people worked hard to make it happen. To them I owe my sincere thanks.

Much has happened since that day in Papua New Guinea when David Werner's letter arrived. His challenge was simple: "Since no one else has written a dental manual like this, why don't you?" With David's encouragement and constant support, I was able to take teaching notes and produce a suitable draft that was the basis for this book. To you, David, for your patience in helping me learn, my heartfelt thanks. Thanks also to Trude Bock and Bill Bower for the home, food, direction, and support, during a short

visit to The Hesperian Foundation in which the book took a definite turn for the better.

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This book is based upon several years of practical experience, made possible by the Canadian Organization CUSO. For this opportunity, and for CUSO's active interest and involvement in this book, I most gratefully say thanks.

Finally, I want to acknowledge my family's contribution. For weeks on end, my wife, Gerri, faithfully read and discussed with me each part of the book as it changed and was rewritten. She did this cheerfully, at a time when she was fully occupied in a graduate study program. For much longer than I had anticipated, Gerri and our two boys, Michael and Brennan, had to tolerate my preoccupations.

My parents endured my wanderings and search for answers to human problems with love and a growing sense of understanding. It is my only disappointment that they did not live to see this book in its final form.

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INTRODUCTION

by David Werner

A healthy tooth is a living part of the body. It is connected by 'life-lines' of blood and nerve to a person's heart and brain. To separate the tooth from the body, or even to interrupt those 'life-lines', means death to the tooth. It also means pain and injury to the body, to the person.

Let us look at it another way. The health of the teeth and gums is related to the health of the whole person, just as the well-being of a person relates to the health of the entire community.

Because of this, the usual separation between dentistry and general health care is neither reasonable nor healthy. Basic care of the teeth and gums—both preventive and curative—should be part of the 'know-how' of all primary health care workers. Ideally, perhaps, *Where There Is No Dentist* should be a part of *Where There Is No Doctor.* Think of it as a companion volume, both to *Where There Is No Doctor* and *Helping Health Workers Learn.*

Murray Dickson has taken care to write this book in a way that will help the readers see dental care as part of community health and development. The approach is what we call 'people centered.'

Where There Is No Dentist is a book about what people can do for themselves and each other to care for their gums and teeth. It is written for:

- **village and neighborhood health workers** who want to learn more about dental care as part of a complete community-based approach to health;
- **school teachers, mothers, fathers,** and anyone concerned with encouraging dental health in their children and their community; and
- **those dentists and dental technicians** who are looking for ways to share their skills, to help people become more self-reliant at lower cost.

Just as with the rest of health care, there is a strong need to 'deprofessionalize' dentistry—to provide ordinary people and community workers with more skills to prevent and cure problems in the mouth. After all, **early care** is what makes the dentist's work unnecessary—and this is the care that each person gives to his or her own teeth, or what a mother does to protect her children's teeth.

While dental disease is decreasing in richer countries, it is on the increase in most poor countries. One reason for this is that people are eating fewer traditional (unrefined) foods and more pre-packaged commercial foods, often sweetened with refined sugar.

Even as the need for dental care is growing, there are still far too few dentists in poor countries. Most of those few work only in the cities, where they serve mostly those who can afford their expensive services.

People in many countries cannot afford to pay for costly professional dental care. Even in rich countries, persons who do not have dental insurance often do not get the attention they need—or go into debt to get it.

Two things can greatly reduce the cost of adequate dental care: popular education about dental health, and the training of primary health workers as dental health promoters. In addition, numbers of **community dental technicians** can be trained—in 2 to 3 months plus a period of apprenticeship—to care for up to 90% of the people who have problems of pain and infection.

Dentists' training usually includes complicated oral surgery, root canal work, orthodontics (straightening teeth), and other complex skills. Yet most dentists rarely do more than pull, drill, and fill teeth—skills that require a fraction of the training they have received. The simpler, more common dental problems should be the work of community dental technicians who are on the front lines (the villages), with secondary help from dentists for more difficult problems.

Would this reduce quality of service? Not necessarily. Studies have shown that dental technicians often can treat problems as well as or better than professional dentists. In Boston (U.S.A.), for example, a study showed many of the basic treatments commonly given by dentists to be done just as well, and often better, by dental technicians with much shorter training.

Fortunately, in some countries skilled dental technicians have managed to become the major providers of the most needed dental services. In India, there are still 'street-corner' dental technicians with footpedal drills, who drill and fill teeth at remarkably low cost.

In Honduras, dental technicians (who learn largely from each other, starting as helpers) have formed their own union. Their political strength was tested when, in the town of Trujillo, a dentist tried to put a technician out of business. The local technician had removed an infected root left mistakenly by the dentist. The technician had commented on the dentist's carelessness, and the dentist heard about it. The dentist sent a policeman who shut down the technician's office and took away his tools. However, the dental technicians' union look this to court. They argued their rights to

practice dentistry, because they are the only persons working in marginal communities where dentists' prices are too high for the people. The court decided in favor of the technicians, and ordered the dentist to return the technician's tools and pay him for work lost.

In other countries dentists and community dental workers work in closer harmony. In Guatemala, Ecuador, Papua New Guinea, and Mozambique, dental technicians are now recognized by the Ministries of Health. In Papua New Guinea and Ecuador, professional dentists train and supervise them to provide dental care to school children. In Ecuador, they work mostly as dentist assistants, bringing high quality services to more people while decreasing costs. The 'dental therapists' in Papua New Guinea are trained to extract, drill, and fill teeth, as well as to work on prevention of dental problems in school children.

In Guatemala and Mozambique, dentists from the dental school have trained village health promoters as dental workers who work with people of all ages. Their training includes community dental health education, cleaning of teeth, extractions, and drilling and filling. These health workers are provided with the few basic instruments needed to provide these services.

In Project Piaxtla Mexico (with which I and the Hesperian Foundation have worked for many years), visiting dentists have also helped train village 'dentics'. They, in turn, now teach basic dental skills to the part-time village health workers. These village dentics, some of whom have had only 3 to 6 years of primary school, now practice—and teach—a wider range of dental skills than the average dentist. Their activities include dental health campaigns with school children, community puppet shows about low-cost dental self-care, cleaning of teeth, extractions, drilling and filling, and the making of dentures (false teeth). Several of the dental workers can now do root canal work—a special treatment to remove the central nerve in order to save an infected tooth. One of the village dentics, remembering what he had seen a dentist do, taught himself how to do root canals when his girlfriend had an infected front tooth that he did not want to pull. (He had also learned to check the tooth from time to time afterward to make sure this treatment had been successful.)

We still have much to learn about dental health. Dentists need to learn from the knowledge of the local people, as well as the people from the dentists.

We have learned that villagers with little formal education often can learn skills with their hands—such as tooth extractions, puppetry, or surgery—much faster than university students (who have never learned to use their hands for much more than pushing pencils). We also have observed that the best way to learn dentistry is not through school but through practice, helping someone with more experience who is willing to teach.

Where There is No Dentist has 2 parts. The first part (Chapters 1–5) discusses teaching and learning about preventive care. It begins by encouraging the health worker to examine herself and her family. To be a good example is the best way to teach.

The second part (Chapters 6–11) talks about diagnosing and treating common dental problems. It is especially for those who live where they cannot reach or afford a dentist. A poor neighborhood in the city can be as distant and neglected as a far-off village. This second part is intended mainly for health workers who have helped organize people to meet their own needs.

Murray Dickson—a Canadian with primary care experience in Northern Canada, Nigeria, Papua New Guinea, and Mozambique—has written this book in clear, simple language. He takes care to use popular names instead of unfamiliar scientific words. For example, instead of speaking of 'dental plaque' the author speaks of the 'coating of germs on the teeth.' Such simple language does not weaken the message. The message is stronger because everyone understands.

The author has said:

> I am sure some dentists will disagree with parts of this book. Some points of disagreement may be small, like the failure to use accepted dental terminology. Other ideas, particularly the suggestion that non-dental people can be trained to provide many kinds of treatments, may make some dentists angry.
>
> The book is meant to be a source for argument and discussion. This way, it may stimulate others to write the kind of manual that is really needed in their countries.

The people must answer to the people's needs. The health of teeth and gums, along with general health, will improve only when people take the lead in caring for themselves. The challenge for dentists and other health professionals is to allow and encourage this to happen.

CHAPTER 1

Your Own Teeth and Gums

Next time you look in a mirror, look at your teeth and the skin (gums) around them. Look in your children's mouths, too. Look at both gums and teeth, because the health of one often depends on the health of the other. **To be strong, teeth need healthy gums. Healthy gums need clean teeth.**

What can good teeth give you?

- GOOD HEALTH
- GOOD LOOKS
- GOOD SPEECH
- GOOD EATING
- GOOD BREATH

And when you think of your teeth, think of your gums. Gums are important for holding each tooth in place.

You need strong teeth to eat different kinds of foods. Different foods are important for health. Nuts, maize, fruits, and meat are some of the best foods—but they are difficult to bite and chew if your teeth are loose and hurting!

You can usually tell if your teeth and gums are healthy or not. Look at the pictures on pages 73 and 74 and compare them with your own mouth. If you find a problem in your mouth, look for its name in Chapter 6 and look for its treatment in Chapter 7.

Most important: when you are not sure of a problem or how to treat it, talk to an experienced dental worker.

If you notice a problem early, often you can stop it from getting worse. It is even better to prevent the problem from starting. You can do this if you know how to keep your teeth and gums healthy.

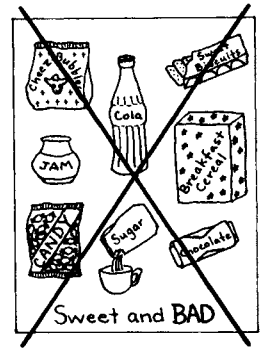
Learn to take care of your own teeth and gums before you try to teach others. A good example is one of your best teaching tools. People will see that you are healthy, and they will want to know why. When you tell people ways to care for their teeth, they will believe you if they know that you do these things yourself. First take care of your own teeth and gums. Then teach your family what you have learned. They, too, will be good examples for others to see.

EAT ONLY GOOD HEALTHY FOODS

The best food is food that you grow or raise yourself. Mix different kinds of food together and eat several times a day. This helps your body as well as your teeth and gums to stay strong and healthy. **Traditional food is usually good food.**

Sweet food, especially the kind you buy from the store, can mix with germs and make cavities—holes in the teeth. Soft food sticks to the teeth easily and it, too, can make a coating of germs and food on the teeth that starts an infection in the gums—gum disease.

Soft and sweet food and drinks with a lot of sugar are bad for both teeth and gums.

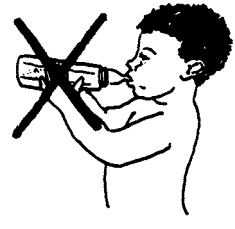


Breast feed to help a child's teeth grow and stay strong. An older child can drink from a cup.

YES
GOOD FOR TEETH

REMEMBER:
BREAST
IS
BEST!

Do not give a baby anything to drink from a bottle. Sweet tea, sugar water or fruit juice can easily make holes in the child's teeth.

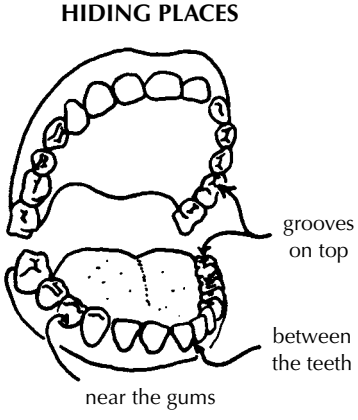


NO
BAD FOR TEETH

Even milk has sugar that can wash over the baby's teeth and cause cavities when it comes from a bottle.

CLEAN YOUR TEETH EVERY DAY

If you do not clean properly, the food that is left on your teeth can hurt the teeth as well as the gums near them.



Here are 3 places where problems start.

Bits of food stay longer in grooves and 'hiding places'. This is where both tooth and gum problems start.

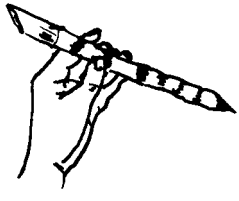
To prevent problems you must take special care to keep these protected places clean.

It is better to clean your teeth carefully once every day than to clean poorly many times a day.

Use a **soft** brush to clean your teeth. Buy one from the store (be sure it says **soft** on the package), or make a brush yourself. To make a brush:

1. Use a small branch of young bamboo, strong grass, or the skin from sugar cane or betel nut.

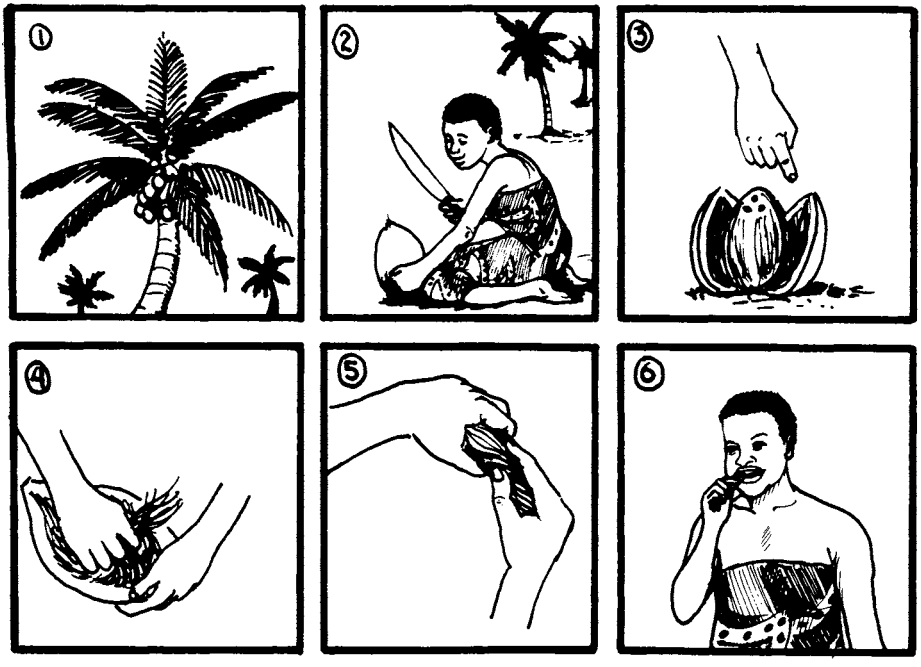
2. Cut a piece that is still green and soft.



3. Chew one end to make it stringy like a brush.

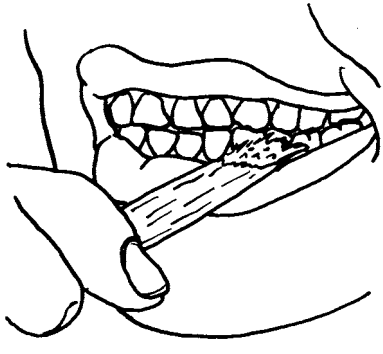
4. Sharpen the other end so it can clean between the teeth (see pages 71-72).

You can twist the fiber from inside a coconut husk into a kind of brush. First rub it and shake away the loose bits. Then use the end to clean your teeth.



Whatever kind of brush you use, be sure to clean your back teeth as well as your front teeth. Scrub the tops and sides where the grooves are. Then push the hairs between the teeth and scrub (page 69).

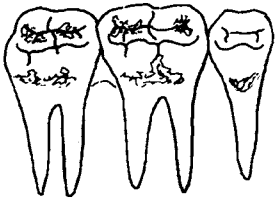
Toothpaste is not necessary. Charcoal or even just water is enough. When your teeth are clean, rinse away the loose pieces of food.



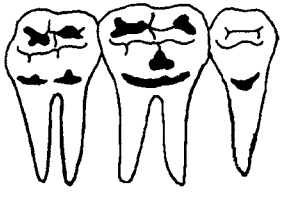
CAVITIES, TOOTHACHES AND ABSCESSES

'Cavities' are holes in teeth. Cavities are made by the infection called **tooth decay.** If you have a black spot on your tooth, it might be a cavity. If that tooth hurts some of the lime, such as when you eat, drink, or breathe cold air, it probably has a cavity in it.

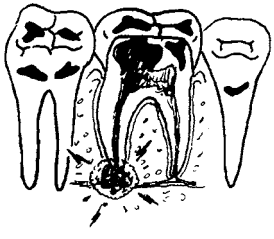
You will get cavities in your teeth if you eat sweet food and then do not clean your teeth. **If you see a cavity starting in your mouth or feel a tooth hurting you, get help right away.** If you do not fill a cavity, it grows bigger and deeper. A dental worker knows how to fill the cavity so you can keep that tooth. Do this before the pain gets worse.



Each tooth has roots that hold it in the jaw bone. Inside each root is a nerve. (p. 39 to 40 and 45)



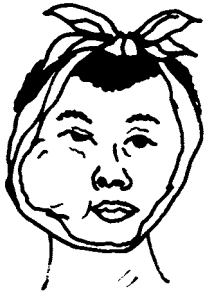
When decay touches the nerve inside the tooth aches, even when you try to sleep.



When infection reaches the inside of a root, it is called a **tooth abscess.**

A tooth with an abscess needs treatment at once, before the infection can go into the bone (page 93). In most cases the tooth must be taken out. If it is not possible to do this right away, you can stop the problem from getting any worse if you follow these steps:

1. Wash the inside of your mouth with warm water. This removes any bits of food caught inside the cavity.
2. Take aspirin or acetominophen for pain. See page 95 for amount.
3. Reduce the swelling:
   - hold warm water inside your mouth near the bad tooth.
   - Wet a cloth with hot water and hold it against your face. **Do not use water hot enough to burn yourself!**

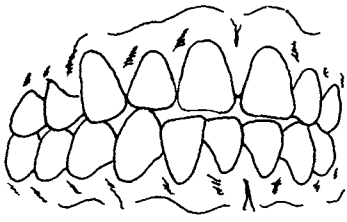


A tooth abscess can cause swelling like this.

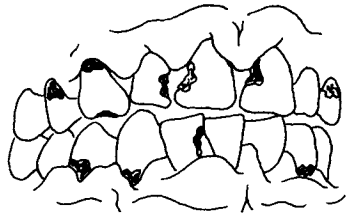
SORE BLEEDING GUMS

Healthy gums fit tightly around the teeth. Gums are **infected** if they are loose, sore, and red, and if they bleed when the teeth are cleaned. Infection in the gums is called **gum disease.**

Gum disease, like tooth decay, happens when acid touches the teeth and gums. This acid is made when sweet and soft foods mix with germs (see page 50).



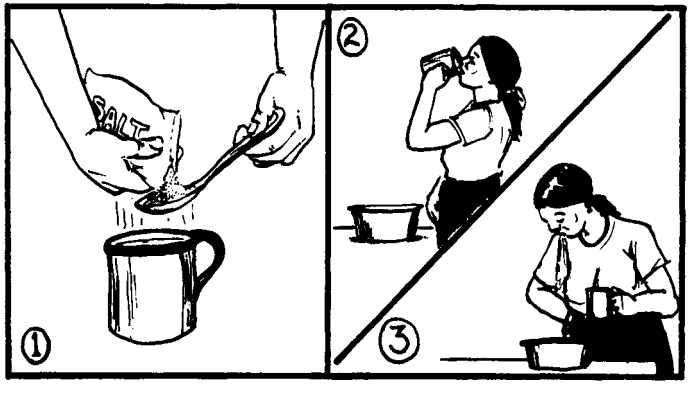
HEALTHY TEETH AND GUMS



CAVITIES AND GUM DISEASE

Infection from gum disease can spread into the root fibers and bone (see page 42). But **you can stop gum disease and prevent it from coming back.** There are two things to do: clean your teeth better and strengthen your gums.

1. Even if your gums are sore and they bleed, you must still clean the teeth beside them. If more food collects on the teeth, the gum infection will get even worse. Get a **soft** brush (see p. 4) and use it gently. This way you will not hurt the gums when you clean.
2. To make your gums stronger and more able to fight the infection:
   - Eat more fresh fruits and green leafy vegetables, and fewer soft sticky foods from the store.
   - Rinse your mouth with warm salt water. Do this every day, even after your gums feel better.



(1) Mix some salt with a cup of warm water. (2) Take a mouthful and rinse. (3) Spit it out. Repeat until all of the salt water is finished.

MORE SERIOUS GUM DISEASE

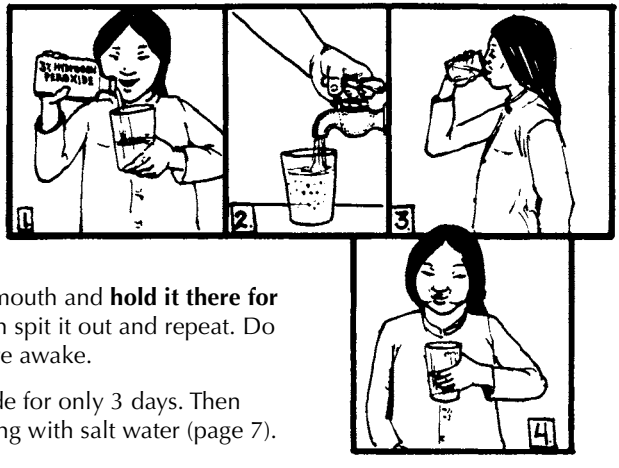
Painful gums that bleed at the slightest touch need special treatment. If you have this problem, ask for help. A dental worker can explain what is happening and what needs to be done. A dental worker can also scrape the teeth and remove the tartar that is poking the gums, making them sore.

At home, you can do some things to help.

- Clean your teeth near the gums with a soft brush. **Gently** push the brush between the tooth and the gum. It may bleed at first, but as the gums toughen, the bleeding will stop.
- Make your food soft, so it is easier to chew. Pounded yam and soup are good examples.
- Eat plenty of fresh fruits and vegetables. If it is difficult for you to bite into fruit, squeeze it and drink the juice.
- Start rinsing your mouth with a mixture of **hydrogen peroxide** and water. You can get hydrogen peroxide from your clinic or your pharmacy (chemist).

  The strength of hydrogen peroxide is important. Ask for a 3% solution, and mix it evenly with water—that is, ½ cup of hydrogen peroxide with ½ cup of water.

> *WARNING:* **Read the label to be sure the solution is 3%. A mixture with more than 3% hydrogen peroxide can burn the mouth.**



Take some into your mouth and **hold it there for about 2 minutes.** Then spit it out and repeat. Do this every hour you are awake.

Use hydrogen peroxide for only 3 days. Then change and start rinsing with salt water (page 7).

If you take care, you can keep your teeth for a lifetime.

CHAPTER 2

Teaching Family and Friends in Your Community

Old people can remember when there were fewer problems with teeth and gums. Children's teeth were stronger and adults kept their teeth longer.

Times are changing. Today there are more tooth and gum problems than ever before. In many countries, tooth decay and gum disease are two of the fastest growing health problems.

This unhealthy situation is getting worse, for two reasons: changes in the kind of food people now are eating, and not enough cleaning after they eat.

BEFORE, the food people ate was their own, grown and prepared by themselves.

Even sugar cane was not as bad as the sticky candy children eat today. The sugar was bad for the teeth, but the fiber in the cane helped rub them clean.

NOW, more people are buying softer and sweeter food from the store. This kind of food sticks to the teeth more easily so it has more time to attack the teeth and gums.

Everyone must be more careful to clean away soft, sweet food. But many people do not know how. Some, especially children, do not even try.

Many people do not understand that tooth and gum problems are caused by certain kinds of food, and poor cleaning of the teeth. In fact, some have a completely different belief.

OH! MY TOOTH HURTS! IT MUST BE FROM MY UNCLE. I MADE HIM ANGRY BEFORE HE DIED.
THERE MAY BE ANOTHER REASON. EATING SWEET FOOD AND NOT CLEANING YOUR TEETH CAN HURT THEM AND MAKE THEM WEAK.

Do not attack a belief because it is traditional. Many traditions are more healthy than 'modern' things. Often, instead of telling people that their belief is wrong, you can remind them of a different tradition that is healthy.

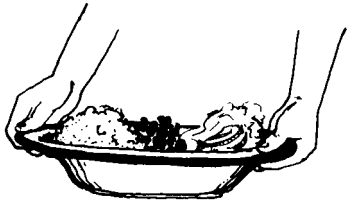
Help your family and friends to recognize their healthy traditions. Then help them find new ways to use these same traditions for better health.

OUR PEOPLE DO NOT USE TOOTHBRUSHES. WE DO NOT HAVE MONEY TO BUY SUCH THINGS AT THE STORE.
BUT WE CAN MAKE FOR OURSELVES MANY OF THE THINGS THE STORE SELLS.
YES, AND WE CAN MAKE OUR OWN TOOTHBRUSHES FROM THE TWIG OF A TREE!

BE A GOOD EXAMPLE

Other people like to watch what you do before they try something different. First show members of your family and then they will be an example to others in your community. For example:

1. Instead of buying all your foods from the store, buy fresh fruits and vegetables from the market. It is even better to grow food in your own garden.



Learn to use several different kinds of foods in each meal. Mixing foods is a healthy idea. Invite friends to share your meals and see the number of different foods you have at each meal.

2. Do not buy fizzy drinks like Coca-Cola or Fanta. They have a lot of added sugar which quickly makes children's teeth rotten.

Also, do not sweeten your child's milk or tea.

When she is young she can learn to enjoy drinks that are not sweet.

Clean, cool water, tea with little sugar, milk, or water from a young coconut are best to drink. Fresh fruits are delicious when you are thirsty.

Most important: do not give your child feeding bottle, especially one with a sweet drink inside. (See page 3.)

3. Keep your children's teeth clean. Your friends will notice clean teeth or teeth that are dirty or have cavities. **Remember, clean teeth are healthy teeth.**

An older child can clean his own teeth if you show him how.

A younger child cannot. He needs help. Each day someone older should clean his teeth for him (page 18).

When you teach, remember that as others learn, they too become teachers. Each person can teach another.

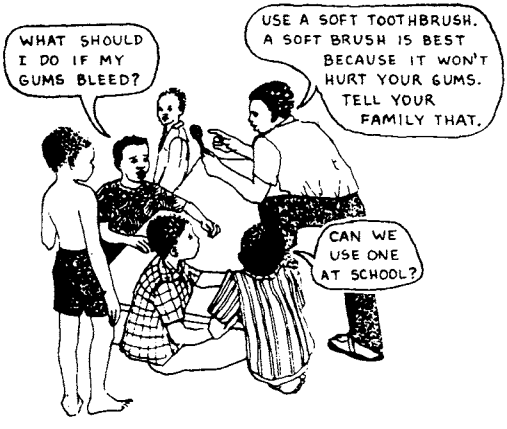
Encourage people to pass along what you have taught. Mothers can teach family and friends. Students can talk at home with brothers, sisters, and older family members.

FROM THE HEALTH CLINIC…

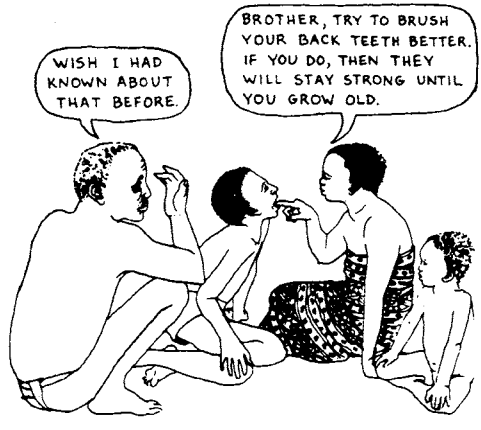
… TO THE HOME

MARIE, PLEASE HELP ME CLEAN BABY'S TEETH AND THEN BROTHER'S TEETH. WE WILL DO IT EVERY DAY.
FIRST, I MUST CLEAN MY OWN TEETH PROPERLY.
THEN MAYBE MY TEETH WON'T HURT LIKE VINCENT'S.

FROM THE SCHOOL…


WHAT SHOULD I DO IF MY GUMS BLEED?
USE A SOFT TOOTHBRUSH. A SOFT BRUSH IS BEST BECAUSE IT WON'T HURT YOUR GUMS. TELL YOUR FAMILY THAT.
CAN WE USE ONE AT SCHOOL?

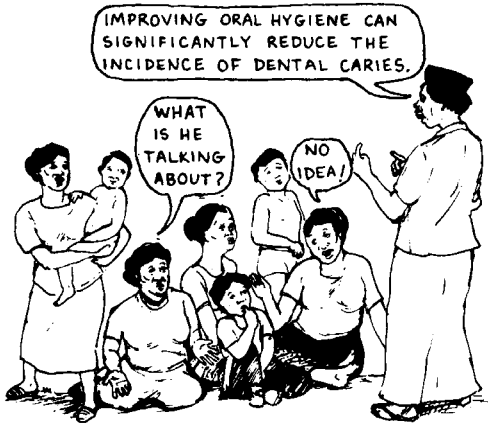
… TO THE HOME


WISH I HAD KNOWN ABOUT THAT BEFORE.
BROTHER, TRY TO BRUSH YOUR BACK TEETH BETTER. IF YOU DO, THEN THEY WILL STAY STRONG UNTIL YOU GROW OLD.

If all learners become teachers, a simple message can begin in the health clinic or school and reach many more people at home.

FINDING THE BEST WAY TO TEACH

Deciding **what** to teach is important, but just as important is **how** to teach.



Learning cannot take place when you use words that people do not understand. They will learn something only when they see how it is related to their lives.

Remember this when you teach about eating good food and keeping teeth clean. Design your own health messages, but be ready to change them if people are not understanding or accepting what you say.

Here are five suggestions for teaching well.

1. Learn First From the People

Get involved in your community's activities. Learn about people's problems, and then offer to help solve them. People will listen to you when they know that you care about them and want to help.

Sit and talk with people. Learn about their customs, traditions and beliefs. **Respect them.**

Learn about their health habits. Improving health may require changing some habits and strengthening others.

Learn also about tooth decay and gum disease in your community.

Make people smile—then look into their mouths.

Find out how many children and adults are having problems with their teeth and gums. Do a survey such as the one on p. 214.

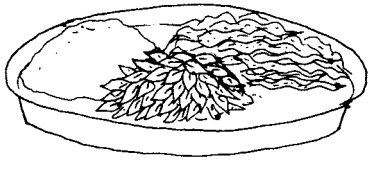
2. Build New Ideas Onto Old Ones

People find their own ways to stay healthy. Many traditions are good, helpful, and worth keeping. But some are not.

When you teach, start with what people already understand and are doing themselves. Then add new ideas.

This method of teaching is called 'association of ideas'. It helps people to understand new ideas because they can compare them with what they already are doing.

In this way people can more easily accept, remember, and do what you suggest.

A HEALTHY TRADITION— builds →		NEW IDEAS AND WAYS
Sweeping the compound makes it a clean and healthy place to live.	in the same way →	Brushing the teeth and gums keeps them clean and healthy.
A small child cannot find his own lice. Mother knows she must help him.	in the same way →	A small child cannot see the food on his teeth. He needs help with that also.
Different vegetables when planted together— like maize and yams— help each other to grow.	in the same way →	 Eating different kinds of food helps people to grow. Eating them several times a day makes your teeth and gums, as well as your whole body, grow stronger.

STORY TELLING—AN EXAMPLE

People everywhere have a tradition of teaching with stories. Many of the things we believe, we learned through stories we heard from parents, friends, and teachers. This is good, except when a story teaches something that isn't true! When a woman gets pregnant, for example, she hears many stories, and she wants to learn whatever she can from these stories. Unfortunately, **some traditional beliefs about pregnancy are partly wrong.** An example is the belief that one must always have dental problems during pregnancy.

Here is a story you can tell to help people see that they are partly right about pregnancy and dental problems, but that there is more to understand.

A Story: Bertine's teeth

Bertine was the dental worker in her village. She was a young woman, but the villagers respected her because she was such a careful worker, and because she knew how to fill cavities and pull teeth without hurting people. She also spent a lot of time teaching people how to avoid dental problems. "Clean your teeth every day!" she often said, at her clinic, at the schools, at village meetings. "Eat a mixture of foods, especially a lot of fruits and vegetables! Avoid candy and sweet, sticky foods!"

When Bertine was 23 years old, she got married and became pregnant. She also began to have some tooth problems of her own. She saw that her gums were bleeding when she cleaned her teeth, and she had small cavities in two of her teeth. As the dental worker, she was embarrassed to have tooth problems, but an older woman told her, "It's natural to lose teeth when you have babies, Bertine. As we say, 'For each child, a tooth'."

One day Lucie, a dental worker from a nearby village, came to see her friend Bertine. Lucie had a young baby, and Bertine asked her a lot of questions about babies and about pregnancy. Then Bertine said, "Of course, I'm having lots of problems with my teeth." "Why do you say 'of course'?" asked Lucie. "Well," Bertine replied, "For each child, a tooth."

"But that's not true!" Lucie cried. "You think you are having tooth and gum problems because you are pregnant, but I bet you are having these problems for all the usual reasons."

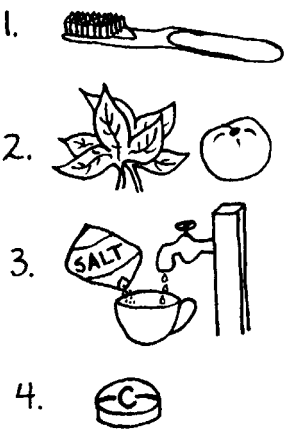
"The usual reasons?" asked Bertine.

"Yes," said Lucie. "How often do you eat now that you are pregnant?" "Well, a lot more than I used to—I have two persons to feed!" "And do you still eat sweet foods sometimes?" Lucie asked. "I guess I do," said Bertine, "and more sweets than before, because I eat more often."

"How about teeth cleaning?" asked Lucie. "Do you clean as often as you did before you were pregnant?" "No," Bertine admitted, "I heard I was going to have tooth problems anyway, and I have been so tired lately.... Oh! Do you suppose that these are the only reasons I am having these problems? How do you know so much about this, Lucie?"

"Because I had the same problems, Bertine. I learned the truth the hard way. I had an infected tooth, and the infection passed to my kidneys. At the health clinic, they told me it is **not** necessary to have tooth problems during pregnancy—and it is even dangerous. I am lucky I did not lose my baby! That can happen, you know, when a tooth problem is not treated. We must fill your cavities right now."

"You mean I can be treated now, before I have my baby?"



"Yes, and you should!" said Lucie. "And you can take better care of your teeth. It is true that because of the pregnancy, your gums are weaker, and they can get infected. But this means you should take even more care than usual to: **(1)** clean regularly and **(2)** eat the right foods. You need to have strength when you are pregnant. An infection in your mouth does not help that. Because your gums are weak, it is also good to **(3)** rinse your mouth every day with warm salt water (see page 7), and if you cannot get fresh fruits and vegetables, then **(4)** take a tablet of Vitamin C every day."

Lucie then offered to clean Bertine's teeth and to fill her cavities. When she touched Bertine's gums, they bled, and Lucie said, "They will bleed at first, but after you clean them regularly for a while, they will be stronger. Bleeding gums are dangerous to a pregnant woman. The bleeding can increase anemia, which is a serious problem."

"If a pregnant woman's tooth has an abscess, is it safe to pull it before she has the baby?" asked Bertine. "Yes," said Lucie, "you just must be gentle. A woman gets tired sitting in a dental chair for a long time, and sometimes you must give some extra anesthetic so she does not feel any pain."

3. **Keep Your Messages Short and Simple**

Instead of partially teaching too many things, it is better to discuss a few things well. After learning what health problems the people feel are greatest, decide **what** information will help them solve these problems. Then think of **how** to share the information. Try to:

- **Use simple words** (see page 13). If you must use a big word, take the time to explain it.
- **Teach people when they are ready to learn.** A sick person, for example, usually wants to know how to prevent his sickness from returning. He will remember what you tell him.
- **Repeat the most important message many times.** Whenever you teach about staying healthy, remember to emphasize eating good food and keeping teeth clean. Repetition helps people remember.
- **Let people see what you mean.** See pages 26 to 34 for ways to use pictures, puppets, and plays.

4. **Teach Wherever People Get Together**

Knowing **where** to teach is sometimes as important as **how** you teach. Instead of asking people to come to a class you have organized, go to them. Look for ways to fit into their way of living. You both will gain from the experience. They will ask more questions, and you will learn how to work with people to solve problems.

Talk with people where they gather near their homes.

Talk to women at health clinics and in the market. Talk to men at business and farming meetings.

Talk to men and women at church meetings, in parents' groups at their children's school, and at community meetings.

Teach men and women at reading groups.

5. Teach Something People Can Do Right Away

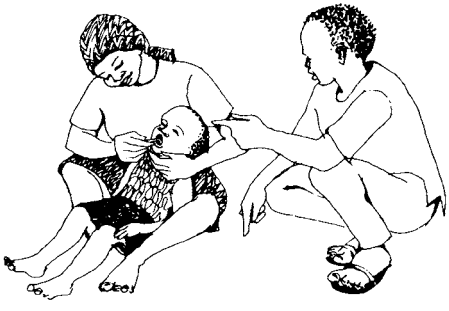
It is good to tell a mother to keep her child's teeth clean, but it is better to show her how to do it. She will remember how if she actually watches you clean her child's teeth.

An even better way for a mother to learn is to let her clean her child's teeth while you watch. **A person discovers something for herself when she does it herself.**

Pick out a child and clean his teeth yourself. Let his mother watch.

Use a soft brush (or for a baby, a clean cloth). Gently but quickly brush or wipe his teeth. Do the best you can even if he cries.

If mothers make this into a habit, the child will expect to have his teeth cleaned and will soon cooperate—just the way he does to bathe or to have lice removed from his hair.



Now let each mother clean her own child's teeth. Teach her to clean on top and on both sides of every tooth.

Ask her to do the same at home each day. At the next clinic, look at the children's teeth and see how well the mothers are doing. Give further help when needed. Always praise and encourage those who are doing well.

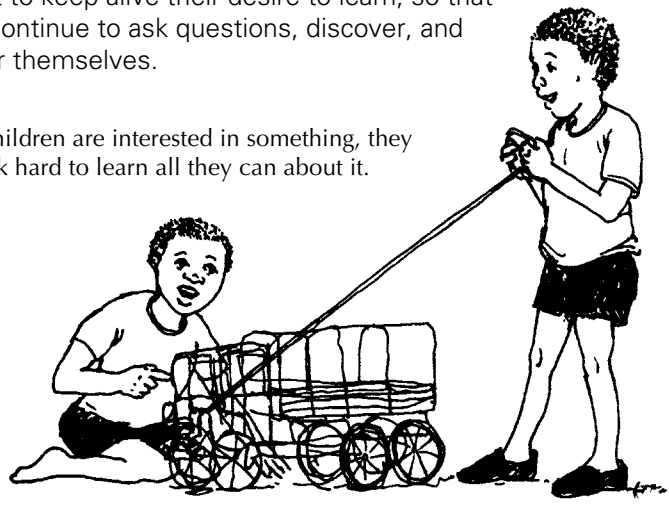
CHAPTER 3

Teaching Children at School

Children want to learn. The want to know more about things that are real to them. Family, friends, and teachers are all important sources of new knowledge for children.

It is important to keep alive their desire to learn, so that children can continue to ask questions, discover, and learn more for themselves.

When children are interested in something, they will work hard to learn all they can about it.



If you relate your teaching to children's interests and needs, they will learn more easily. New information added to what they already know helps children to understand your lesson better. As a result, they will want to learn more because the information is both interesting and worthwhile.

Teaching about teeth and gums is important. You must do it well if you want children to pay attention, learn, and finally act to take care of their own teeth and gums.

As school children continue to learn, they can share their new ideas and information at home with brothers, sisters, mothers, fathers, and grandparents. In this way, the circle of teaching and learning described on page 12 comes back into the family and is complete.

This chapter has two parts. Part 1 gives seven guidelines for assuring that learning takes place. Part 2 suggests ways to have fun while learning—with stories, games, and pictures. In Chapter 4 there are nine questions on teeth and gums with specific activities for learning how to answer them.

PART 1:
TEACHING SO THAT LEARNING CAN TAKE PLACE

More children than ever before are having problems with their **teeth** and their **gums.**

A tooth that hurts or gums that are sore can affect a student's ability to pay attention in school and learn.

Treating the problem makes the child feel better, and that is important. It is equally important to prevent the same problem from returning later.

Working together, teachers and school children can do much to prevent both tooth decay and gum disease.

Keeping the mouth healthy involves learning about eating good food and keeping teeth clean. Just giving information is not enough, though. To truly learn, children need a chance to find out things for themselves.

Forcing a person simply to accept what you say does not work very well.

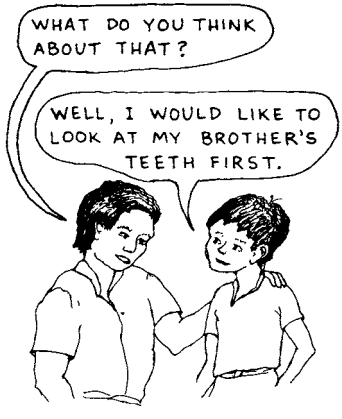
A student learns not to question. What you teach may have no relation to his own experiences and needs.

As a result, he may end up not doing what you teach—not eating good foods, and not cleaning his teeth.

Learning happens when a student with a question or an idea is able to discover more about it himself.

It also happens when he has a chance to do whatever is necessary to take better care of himself and his family.

He can learn by doing. Give him a chance to eat good food and clean his teeth **at school.**

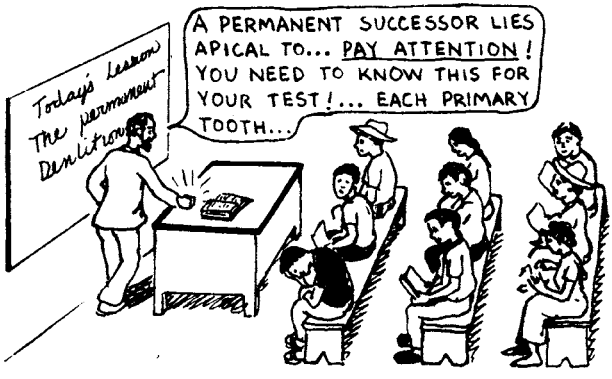


Learning about teeth and gums can be fun. When the teaching is real and practical, students love to learn. Here are some ideas:

Teaching so that learning can take place

1. Teach and learn together with your school children.
2. Start with what the students already know.
3. Let students see and then do.
4. Let children help each other.
5. Teach about teeth and gums together with other subjects.
6. Be a good example.
7. Make the community part of your classroom.

1. Teach and Learn Together with School Children


Today's Lesson: The permanent Dentition
A PERMANENT SUCCESSOR LIES APICAL TO... PAY ATTENTION! YOU NEED TO KNOW THIS FOR YOUR TEST!... EACH PRIMARY TOOTH...

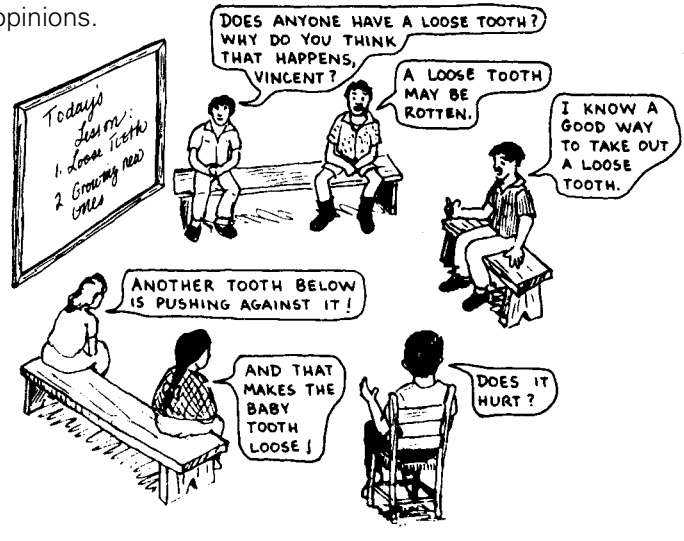
Share ideas instead of always giving information. Children learn more when they are involved.

A lecture transfers your own notes to the children's notebooks without ever passing through their minds.

A discussion draws out information and opinions.

It helps you to learn more about the school children, what they already know and believe to be true.

But it also allows you to introduce important information that is related to the discussion.

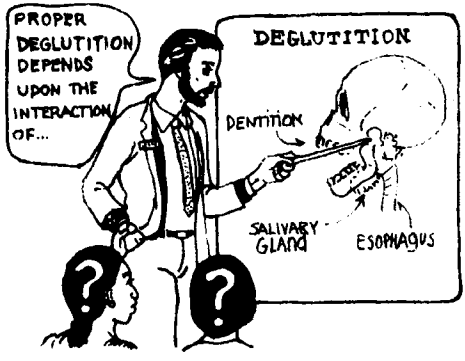

Today's Lesson: 1. Loose Teeth 2. Growing new ones
DOES ANYONE HAVE A LOOSE TOOTH? WHY DO YOU THINK THAT HAPPENS, VINCENT?
A LOOSE TOOTH MAY BE ROTTEN.
I KNOW A GOOD WAY TO TAKE OUT A LOOSE TOOTH.
ANOTHER TOOTH BELOW IS PUSHING AGAINST IT!
AND THAT MAKES THE BABY TOOTH LOOSE!
DOES IT HURT?

2. Start with What the Students Already Know

To have meaning, learning should be a part of daily living. Talk with your students. Find out what they know about teeth and gums, and what questions they might have.

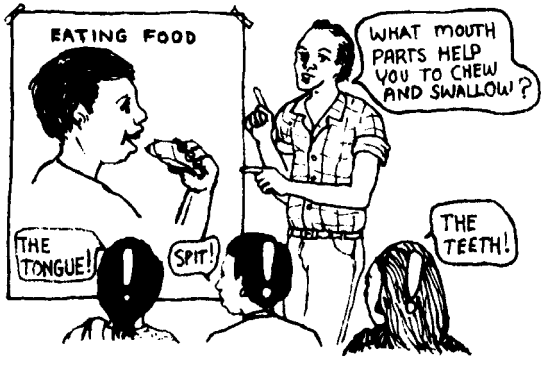
Add information by building upon what a person already knows.

Do not use big words. Scientific names and textbook explanations are confusing, and you usually do not need them. Talk about teeth and gums using words that a school child can understand and use later at home.



This way makes students feel stupid.

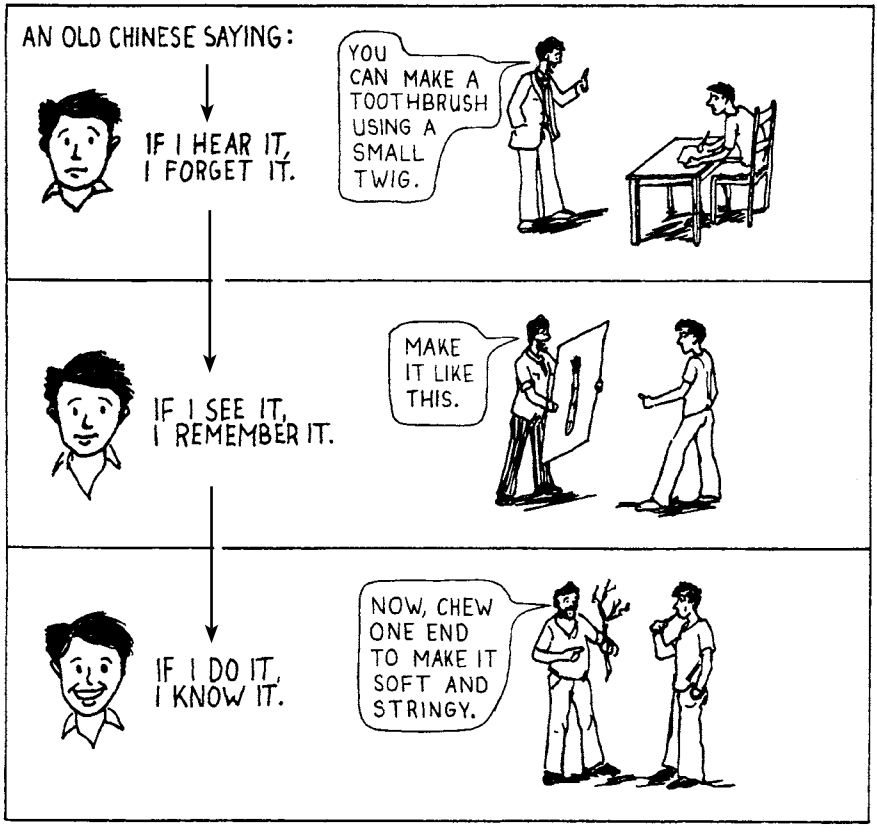
This way lets the students feel good, because it makes sense and they know something about it.



When you can understand new information, you gain confidence and you look forward to learning more.

3. Let Students See and Do

Students learn best when they can take part and find out for themselves about something new.


AN OLD CHINESE SAYING:
IF I HEAR IT, I FORGET IT.
YOU CAN MAKE A TOOTHBRUSH USING A SMALL TWIG.
IF I SEE IT, I REMEMBER IT.
MAKE IT LIKE THIS.
IF I DO IT, I KNOW IT.
NOW, CHEW ONE END TO MAKE IT SOFT AND STRINGY.

A lecture about brushing teeth is usually not interesting at all.

Learning is more interesting when students can see how to make a brush and how to clean teeth properly.

If students can actually make their own brushes and clean their own teeth, it is not only interesting but fun.

A student who takes part will not forget. What he learns by doing becomes part of himself.

4. Let Children Help Each Other*

In most families, older children have important work to do—taking care of their younger brothers and sisters. These older children can do much to teach the younger ones about care of teeth and gums. For example:

- When they feed their younger brothers and sisters they can encourage them to eat good food, like fruit instead of candy.
- They can do a play or puppet show about care of teeth and gums.
- They can check the teeth and gums of the younger children and 'score' them on how healthy they are (see p. 60).
- Best of all, they can actually clean the teeth of the younger ones, and show them how to clean their own teeth when they are able.

Here a group of school children in Ajoya, Mexico is putting a high-fluoride paste (see p. 205) on the teeth of the younger children.

5. Teach About Teeth and Gums Together with Other Subjects

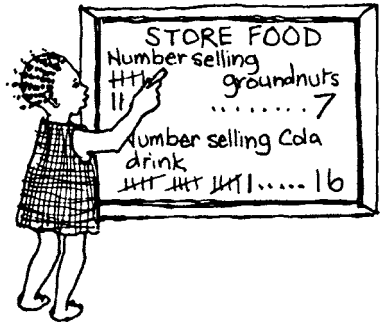
Teeth and gums are part of a bigger health picture. Teach about them in class at the came time.

Eating good food can be part of a discussion on nutrition, teeth, farming methods, and the politics of who owns the lands.

Cleaning the teeth can be part of a discussion on hygiene, clean water, and traditions and customs.

A good way for school children to learn about using numbers is to do a survey in the community.

The results will tell the children something about health problems in their community. For an example of a survey of health problems, see page **3**-14 of *Helping Health Workers Learn.*



*For more ideas on how school children can help each other, write to CHILD-to-child Trust, Institute of Education, 20 Bedford Way, London, WC1H 0AL, UK. Tel: 44-207-612-6649. Fax: 44-207-612-6645. E-mail: ccenquiries@ioe.ac.uk. Website: www.child-to-child.org

6. Be a Good Example

Children watch people around them. They pay attention to what you do, as well as to what you say.

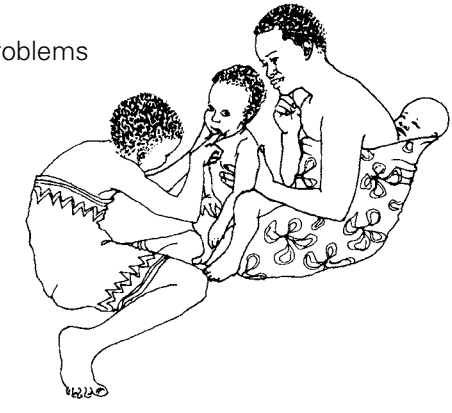
Be a good example. **Take care to do yourself what you are teaching to your students.**

Your family can be a good example for others.

- Clean your teeth carefully every day. Also, help your children keep their teeth clean.
- Make a garden near your house and plant a variety of vegetables and fruits in it.
- Buy only good, healthy food from the store. Do not buy sweet foods and drinks for yourself or your children.

7. Make the Community Part of Your Classroom

A child's home and his community are really more important to him than his school. Learning will be more interesting for a student if the day-to-day needs of his home and his community are part of school discussion.



Let students find out more about problems at home and in their community.

For example:

- How many small children have cavities or red, bleeding gums?
- How many stores have mostly sweet snack foods on their shelves?
- Why do the people not grow and eat more local food?

Back in the classroom, students can record what they find. Ask the children to think of ways to solve the problems they found. If they can think of a program to help solve a health problem, let them go back into their community and try it.

PART 2
MAKING LEARNING EXCITING, VISUAL, AND FUN

Here are some ideas to help students **see** what you are teaching, and to **have fun** while they learn. Students can also show these things to others. Teaching others is an excellent way to learn.

Tell a story about food or teeth. For example, tell a story about why a wild cat's teeth are different in shape from a goat's teeth (page 40). Stories are an excellent way to learn, both for the storyteller and for those listening. Leave time at the end to discuss the story and to introduce new information. See the example of storytelling on pages 15 to 16.

Make up a play or drama about good food or clean teeth. Show it later to the community.

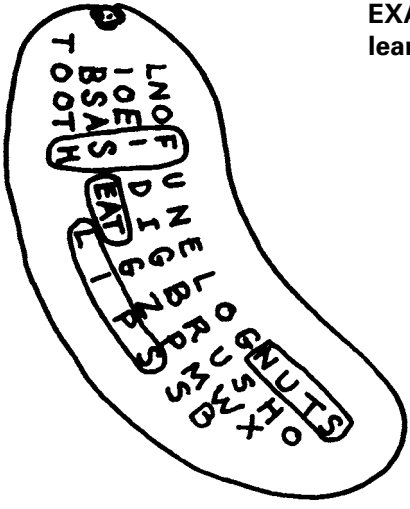
The play should be about looking for an answer to a real problem. If the children invent the play, they will have to think, plan, and solve problems. A play also helps children learn how to talk with and teach others.

These school children in Nicaragua are doing a play about cavities. On the left, germs and sweet food are combining and trying to make a hole in the 'tooth'. But a giant toothbrush (right) beats them away!

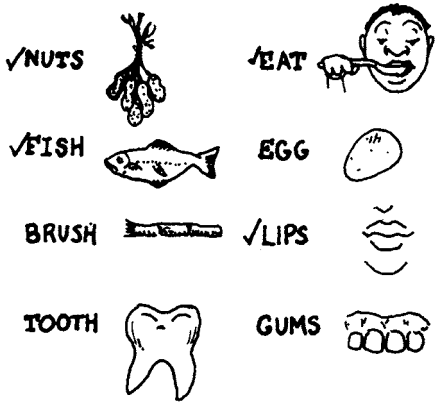
Do a demonstration using local resources.

Try, for example, the 'tooth in the Coca-Cola' test on page 48.

Puzzles can help school children discover answers for themselves. You can make your own. The best puzzles are with words that the students know and can use easily.

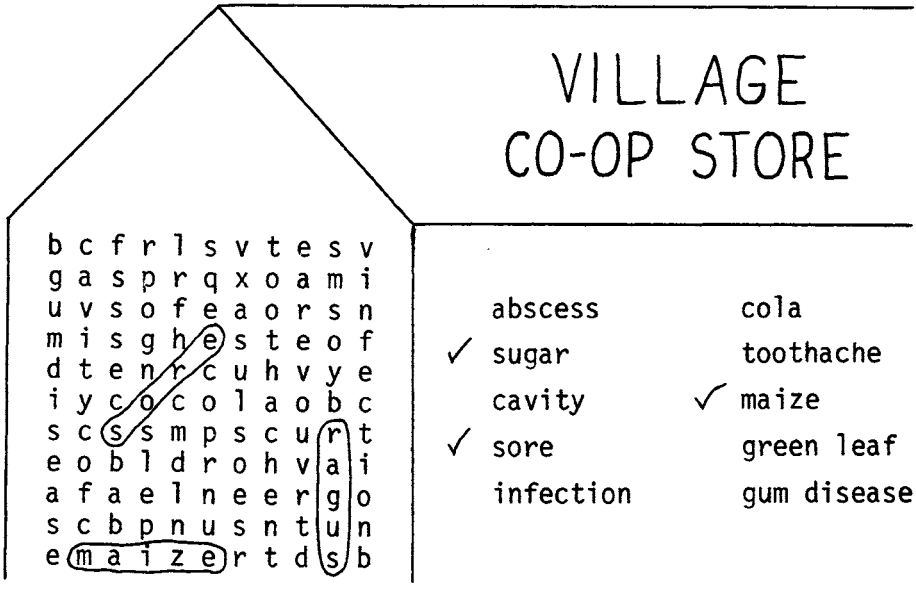


EXAMPLE (for younger children just learning to read) Try to find these words:



As you find each word, put a ✓ beside it.

An older child can try to find important words that are more difficult.


VILLAGE
CO-OP STORE
b c f r l s v t e s v
g a s p r q x o a m i
u v s o f e a o r s n
m i s g h e s t e o f
d t e n r c u h v y e
i y c o c o l a o b c
s c s s m p s c u r t
e o b l d r o h v a i
a f a e l n e e r g o
s c b p n u s n t u n
e m a i z e r t d s b
abscess
✓ sugar
cavity
✓ sore
infection
cola
toothache
✓ maize
green leaf
gum disease

Spell some of the words diagonally (slanted). It will make the puzzle harder.

You can use pictures on posters, flip charts, and on flannel-boards.

Pictures that school children draw themselves are best. They learn simply by drawing them. Also, school children will draw local people and local experiences, and the people will understand their pictures better than the ones sent from a central office far away.

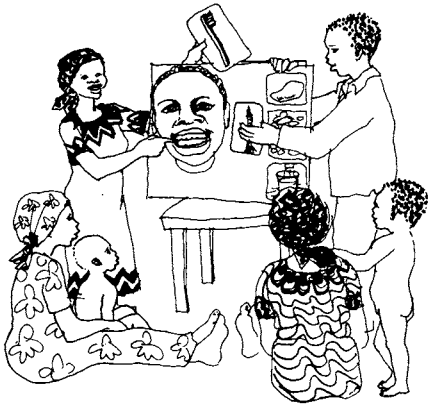
Photographs of local people and events are also good. If there is a photography club in a local secondary school, have them take some pictures for you. They may even print the photographs larger so that you can use them as posters.

Ask the children to make pictures big enough so that a person can stand far away and see them easily.

Let each child carry her poster home to show her family and friends.

Hang up other posters in the store, church, or other places where people will see them.

Pictures can be made to stick to cloth and then used to tell a story. Cover a board with a piece of flannel cloth or a soft blanket, to make a **flannel-board.***

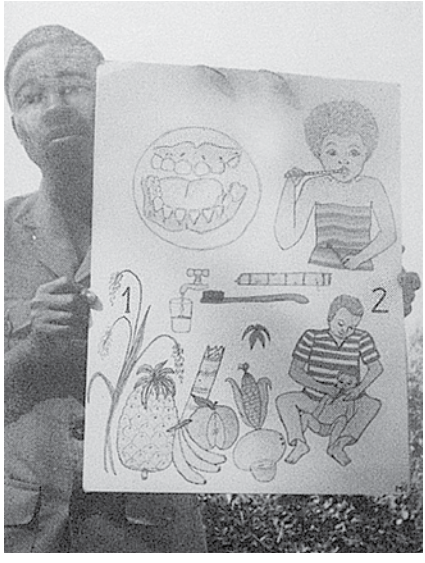


Mix some flour and water to make glue. Then glue a strip of sandpaper to the back of each picture. The sandpaper sticks to the cloth and lets you place the picture where you want on the cloth.

Let the child use her pictures and cloth outside of the school, to show her story to family and friends.

*For more ideas on flannel-boards, see pages **11-**15 to **11**-19 of *Helping Health Workers Learn.*

Flip charts are excellent for telling a story with pictures. Often, people can guess what the story is about just from the pictures. When showing the pictures on a flip chart, ask as many questions as you can, to get the people to tell you the story.



This is part of a flip chart presentation on mothers' and children's health. Notice the rings at the top that hold the flip chart together. They are made from old electrical cords.

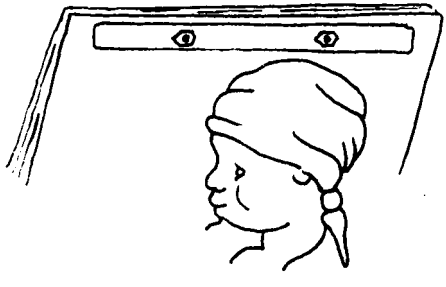
Here a health worker from Mozambique is holding a flip chart with pictures about care of teeth and gums. There are no words with the pictures.

But he can read a short message written on the back of the page before. There are also examples of questions to ask.

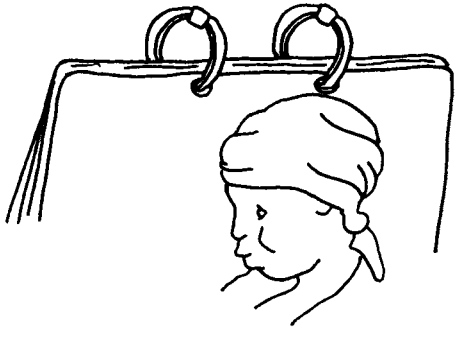
This way, anyone who can read can tell the 'flip chart story' to others.

There is also a small copy of the big picture on the back of the page before.

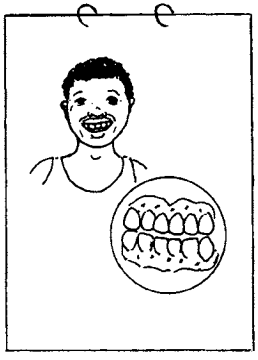
Find a way to attach the sheets of heavy paper. Here are two ways:



with 2 thin pieces of wood



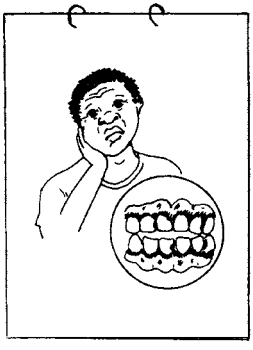
with metal or wire rings



FLIP CHARTS—AN EXAMPLE

Dental workers in Mozambique created this flip chart presentation for teaching in schools.

1) *Here is a healthy, happy schoolboy.* In the circle you see the inside of his mouth. His teeth are white and clean. Look at his **gums.** What color are they? Are they tight or loose? Between the teeth, are the gums pointed or flat?

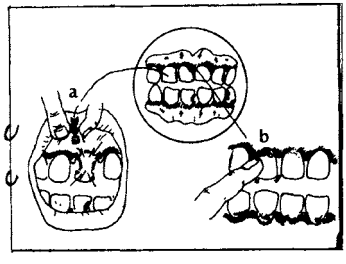


2) *This is an unhappy, sick boy*. What color are his teeth? Not only are they yellow, there are black spots. These are **cavities.**

What color are his gums? Are they pointed? Loose, red, swollen gums are signs of **gum disease.**

Both cavities and gum disease can be treated.

3) *What happens if tooth and gum problems are not treated?*



a) The black hole grows bigger on the tooth and a sore forms on the gums near the root. The tooth hurts whenever you touch it.

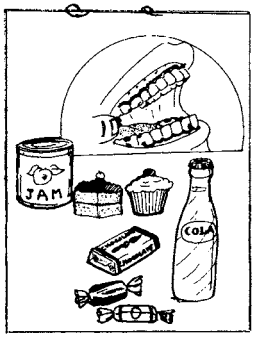
b) The red, loose gums pull away from the tooth. Infection gets to the bone and eats it. The tooth loses the bone and the gum around it.

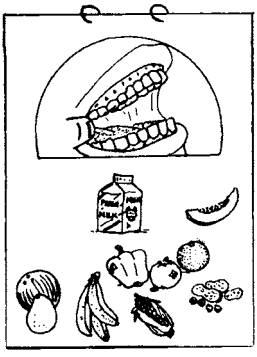
The first problem is a **tooth abscess.** The second is **advanced gum disease.** If either of these things happens, the tooth must be taken out.

4) *Why does the boy have cavities and gum disease?* There are 2 reasons.

a) **He eats too many sweet foods.**
What foods do you see here?
What other foods hurt the teeth?

b) **He does not clean his teeth regularly.**
The germs in his mouth eat sugar from his food and make acid. Acid causes both cavities and gum disease.

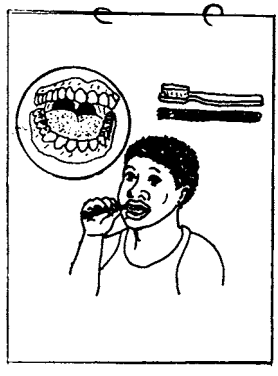




5) *What foods can the boy eat to keep his teeth and gums healthy? What do you see in this picture?*

Natural foods, with no sugar added, are the best. The foods you grow yourself and local foods from the market are better than sweet foods from the store.

6) *How can we clean our teeth?*



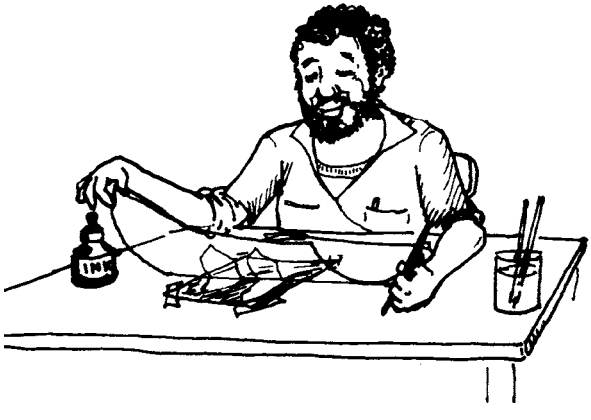
Carefully is the important word to remember. Clean your teeth at least once a day, carefully brushing every part of every tooth—outside, inside, and top. Be very careful to **push your brush between your teeth.** That is where the germs and food collect to make acid.

If you do not have a toothbrush, you can make one from a stick. Toothpaste is not necessary. Clean water is enough.

Chapter 12 in ***Helping Heath Workers Learn*** is full of ideas on how to make and use pictures effectively. Once you have a good original, you do not need to be an artist to make a good copy. Here is an easy method that can involve every student.

Place thin see-through paper over the original drawing. Carefully trace a copy.

Now place the copy on a new sheet of heavy paper. Pressing firmly with a pencil, retrace all of the fines on the thin copy paper.



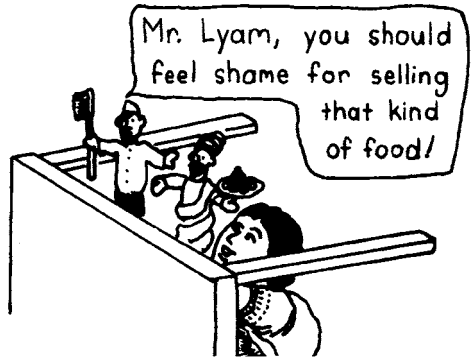
Remove the tracing paper. Pressure from the pencil has made fines on the poster paper. Redraw them with a pencil so they stand out clearly.

Your copy is now ready for coloring. And you can use your copy paper again to make another copy.

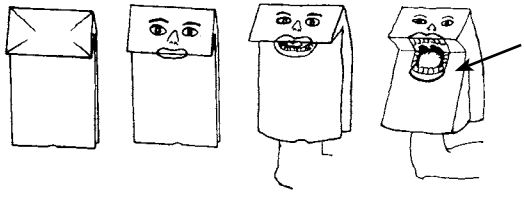
Use puppet shows to act out the messages of eating good food and keeping teeth clean.

Students can make their own puppets to look like people or animals.

Using puppets, it is often easier to say things that people themselves cannot. For example, they can talk openly about the bad food sold at the village store.

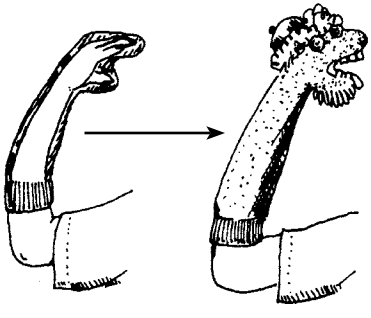


Children can make puppets easily from paper bags. They are good for showing teeth because you can make a wide-open mouth.



Open and close your hand to make it eat or speak.

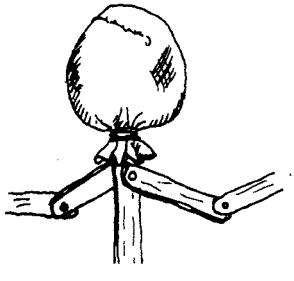
To make a bigger puppet, attach a cardboard face to the bag.



A puppet made from a sock looks alive.

1. Fit the sock over your hand.
2. Make the mouth by pushing in the cloth between your thumb and fingers.
3. Add eyes, nose and hair to the sock or to a box that fits over it.

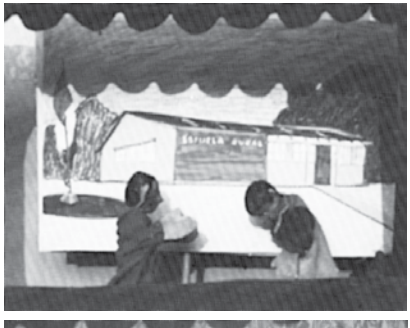
Loosely fill a cloth bag with old cotton or paper. Put the end of a stick inside, and tie the bag to it with tape or string. Make a sad or happy face to fit the story. Dress the puppet with an old piece of cloth.



PUPPET SHOWS—AN EXAMPLE*

Above, school children in Ajoya, Mexico are holding puppets they made themselves. On the left, you see them in front of the stage and at right, the children show how they hold the puppets behind the stage.

1) They called their puppet show "Rotten Teeth—And A Friend's Advice."

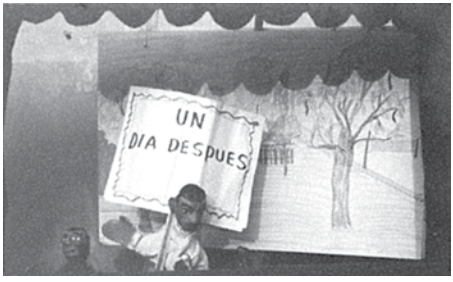


2) Pedro, a schoolboy, is sad. His friends looked into his mouth and saw two teeth with big holes in them. He tells his brother he wants to walk home alone.

3) On the way, Pedro meets Maria, a friend who is a dental worker. "I'm not sad because the others are laughing," says Pedro." I know the real problem. The holes in my teeth will get bigger. My teeth will rot and fall out, and maybe my permanent teeth coming in will rot, too."

   Maria thinks she knows what to do. "We will talk to your father," she says.

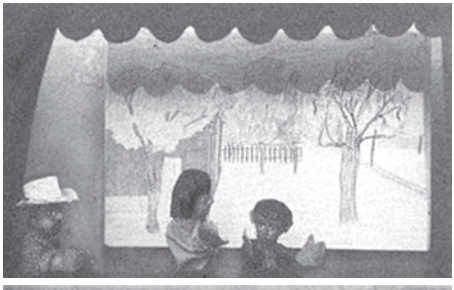
* For another example of a puppet show, and more suggestions for making puppets, see pages **27**-35 to **27**-39 of ***Helping Health Workers Learn.***



4) One day later.
(Note how the scene behind the puppets changes. It is a flipchart with pictures to show the different places the puppets 'go'.)

5) "I am a poor farmer," Pedro's father tells Maria. "I only go to the city two times a year to sell my crops. I cannot take the boy to the city and pay for fillings in his teeth."

Maria answers, "But we can save his teeth with a temporary cement filling."*



6) "Then, when you have time and money, you can go to the city. I know a dental worker who will put in a permanent filling. I trust him. I will send a note with you, and it will not cost much.

"Good!" says the father. "Come on, Pedro," says Maria, "I'll put some cement in those holes!"

7) Four months later, Pedro visits the dental worker in the city. "Maria's good fillings saved your teeth," he says. "These permanent fillings will last for years."

"Terrific!" says Pedro.

8) After the show, the puppets played a game. Throwing a ball into the audience, they asked questions like "How do you keep cavities from happening?" Each child who caught the ball answered the question and threw it back. Then the children in the audience began asking questions for the puppets to answer. "Why did you get rotten teeth?" one child asked Pedro. The puppet looked down and said, "Too much candy!"

* To learn how to make a temporary filling, see Chapter 10.

CHAPTER 4

School Activities for Learning About Teeth and Gums

We can help school children in two ways. First, they need treatment now for problems they already have. Second, they need to learn how to prevent problems from hurting them (and their families) later.

Treatment and prevention go together. It is a mistake to emphasize only prevention and to forget about treatment. **In fact, early treatment is the first step to prevention because it usually meets a person's most strongly felt, immediate need.**

As a community dental worker, you can visit a school and find out what the felt needs are. Begin with the teacher. Examine for cavities, bleeding gums, or other problems. Then look at the students.

Chapter 6 tells you how to examine a person. It also helps you decide what treatment to give, and who should give it.

Then teach how to prevent dental problems. Give the teacher ideas to help students learn why they have problems, and how to keep the problems from returning. The best way to learn is by doing—through activities, not lectures. This chapter has many suggestions for activities.

The best health practice is to prevent cavities and gum disease from even starting. With these activities, children can **do** something to guard their health.

Teacher, each day at school:

Suggest ways for your students to eat good healthy kinds of food.

AND

Give your students time to clean their teeth.

A Note To Teachers:

Do not wait for a dental worker. This book, and especially this chapter, is written to help you learn and do things yourself. But do ask your dental worker to work with you. He probably has suggestions that would fit your situation. After examining the children, he can help you follow their progress. You can then find out how much they are learning and how healthy they are becoming.

To begin, talk with your students to find out what they think and what they already know. What are their traditional beliefs? Some may be helpful, and others may need changing. At first it is best simply to discuss.

Ask the kind of questions that get students talking. Later they will take part in discussions more easily.

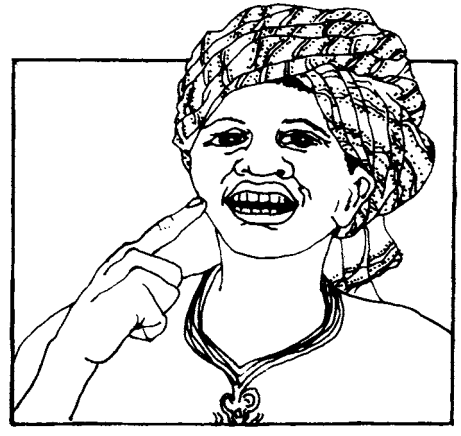
Add new information as you go along, changing some ideas but usually building upon what the students already know.

This chapter asks nine questions:

- Why do we need teeth and gums?
- Why do some teeth look different?
- What holds the teeth?
- How often do teeth grow in?
- What makes teeth hurt?
- How do germs make holes in the teeth?
- What makes the gums feel sore?
- What does it mean if a tooth is loose?
- How can we prevent cavities and sore gums?

For each question, there is an activity to help students discover answers for themselves. The questions are not in any particular order, nor are they written for any particular grade level. Make your own lesson plan, using the main idea to help you. Shorten the lesson and make it easier for younger children. Add more information for older students and let them do more activities.

Why Do We Need Teeth and Gums?



THE IDEA:

Your teeth and the gums around them help you in many ways.

Teeth are important for:

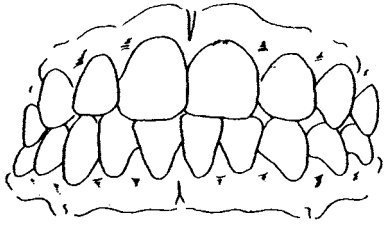
Good **Health.** Infection from a bad tooth can spread to other parts of your body.

Good **Looks.** Healthy teeth that look good help you feel good.

Good **Speech**. Your tongue and lips touching the teeth help you make many sounds.

Good **Eating.** Your teeth break food into small pieces so that you can swallow and digest it better.

Good **Breath.** If you leave food around your teeth, your breath will smell bad.



Your gums are important too. They fit tightly around the teeth, and help to keep them strong. Without strong gums, your teeth are of no use. Most old people lose teeth because of bad gums, not bad teeth.

ACTIVITIES*:*

1. **Draw or cut pictures of people from magazines.** Make posters to show that healthy teeth make a person happy, while bad teeth make a person sad. Use the posters for discussion.

   Hang up a picture of a person the students know and like. Put black on one of her front teeth. Talk about it.

   OR

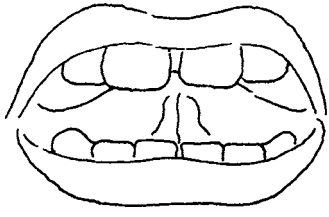
   Leave the picture for a few days. Then put black on some of her teeth before the students come to school. See who notices first.

   When someone sees the difference, talk about how the person looks, how teeth can be lost, how to prevent that, and what she can do now.

Make a picture of a person who has lost all of his teeth. He looks old.

Talk about how hard it is for him to eat properly or speak clearly.

2. Have the students say words that use teeth to make sounds.



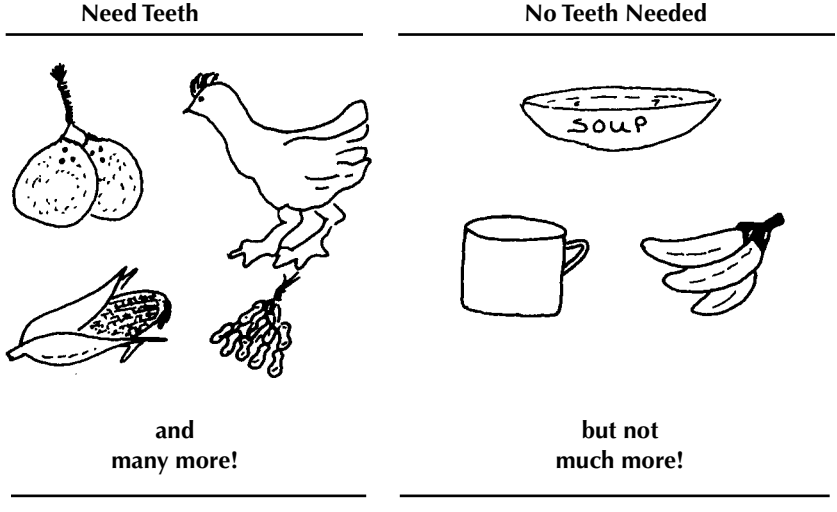
"v" and "f" — friend, fever — the lower lip touches the top teeth.

"th" — the, teeth — the tongue touches the top teeth.

"s" — sun — air goes between the teeth.

Now, try saying the same words again, but do not let the tongue or lips touch the teeth.

3. Have students draw pictures of good foods we use our teeth to eat. Then draw foods that we can eat if we lose our teeth.

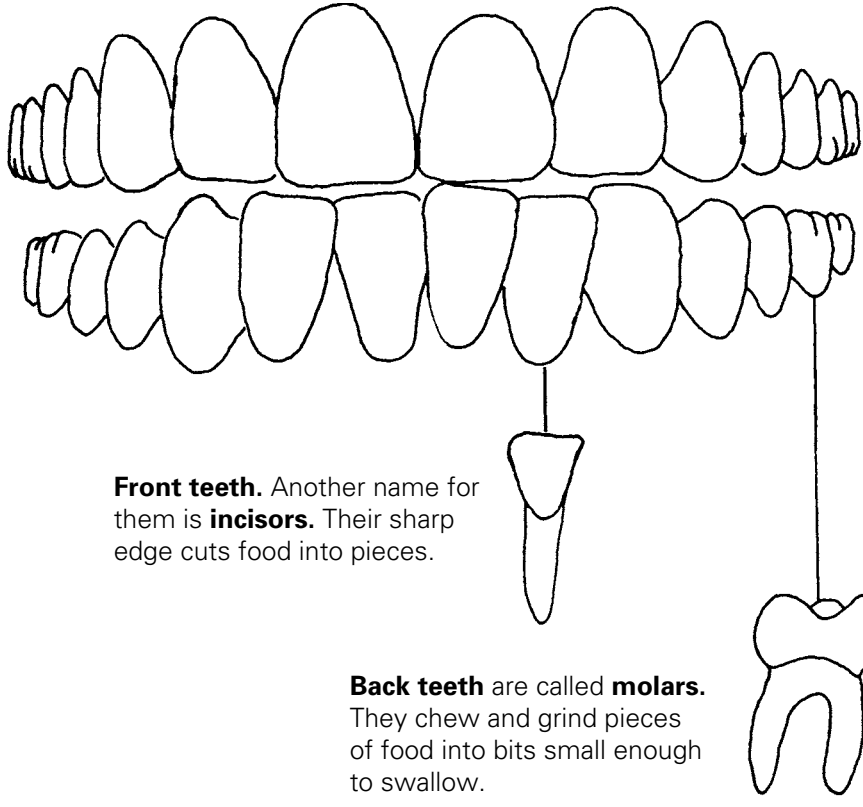


Talk about this together. Try to eat a mango or some maize without using your teeth, or using only your front teeth.

Why Do Some Teeth Look Different?

THE IDEA:

We need two different kinds of teeth to help us eat our food.



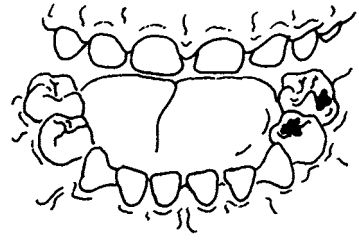
Front teeth. Another name for them is **incisors.** Their sharp edge cuts food into pieces.

Back teeth are called **molars.** They chew and grind pieces of food into bits small enough to swallow.

The outside of a tooth is the hardest and strongest part of your body. When a tooth is healthy, it can chew hard food, even bone. The shape of a tooth allows us to swallow food when the small pieces can slide down its smooth sides.

Small bits of food often get caught inside deep lines, or grooves, in a tooth.

Look for them on the top and the sides of back teeth.

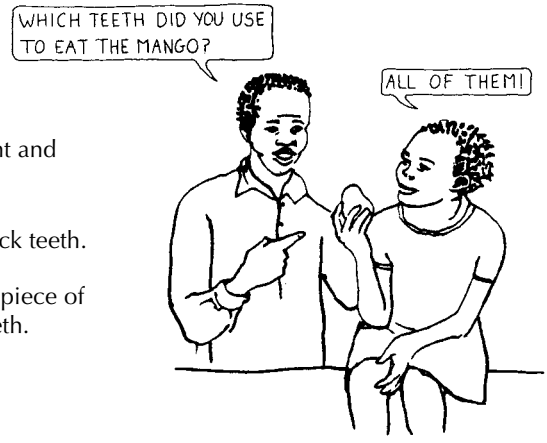


Food that is not cleaned away from the grooves can make a cavity (hole) in them.

A tooth with a cavity is weak and often hurts.

ACTIVITIES:

1. **Ask the students to bring different kinds of food to class.** Bring some yourself.

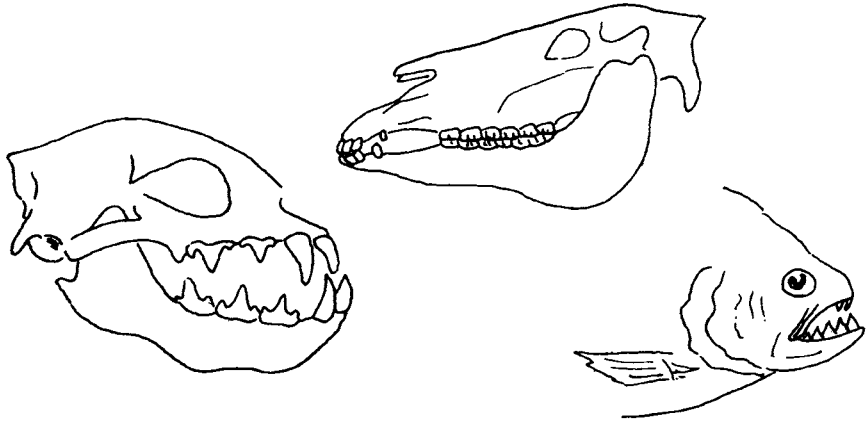


Eat the food using first the front and then the back teeth.

Bite a guava using only the back teeth.

Chew completely a mango or piece of maize, using only the front teeth.

2. **Collect teeth from different animals.** Let the students discover from the shape of an animal's teeth the kind of food it usually eats. For instance, a wild cat needs sharp pointed teeth to tear meat, but a goat needs flat teeth to chew grass.



Make a poster to show the animal, its teeth, and the kind of food it likes to eat.

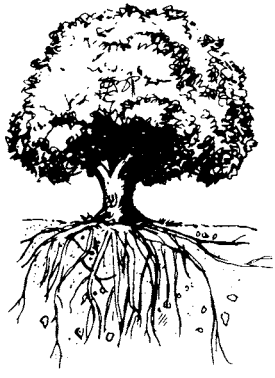
3. **Have each student take a partner.** Let each look at the shape of the front and back teeth in the other's mouth.

   Talk about the many different kinds of food we need to stay healthy. Discuss which teeth we use to chew meat, fish, mango, and other good foods in your area. (For most foods, the answer is both front and back teeth!)

What Holds the Teeth?

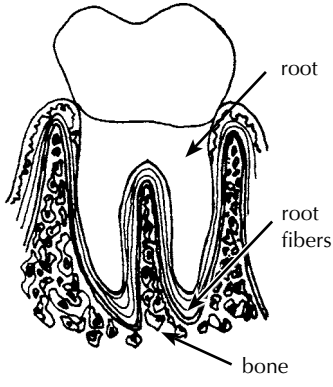
THE IDEA:

When you look inside someone's mouth, you see only the top part of each tooth. The bottom part, its root, is inside the bone under the gum.



The roots of the tooth hold it in the bone just like the roots of a tree hold it firmly in the ground.

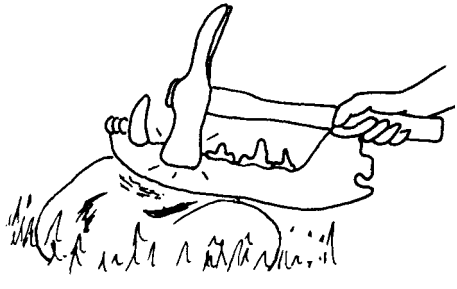
The roots of the tooth do not actually touch the bone. Root fibers connect the root and bone, holding the tooth in place.

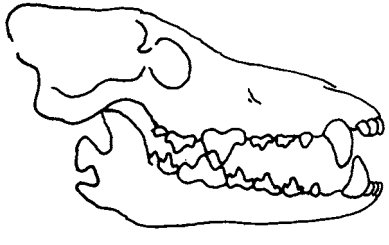


The gums do not hold the teeth, but healthy gums will keep harmful germs from getting to the bone and root fibers. When the gums are not healthy, they form deep 'pockets' which collect germs. Soon, these germs will reach the root fibers and bone. The bone pulls away from the tooth in order to get away from the germs. With no bone to hold it, the tooth is lost. This is the most common reason why teeth fall out.

ACTIVITIES:

1. **Have the students look for an old jaw bone** from a dog or other animal. Notice that bone goes around every root of every tooth and holds it tightly. Break away some of the bone and look at the roots of the teeth.

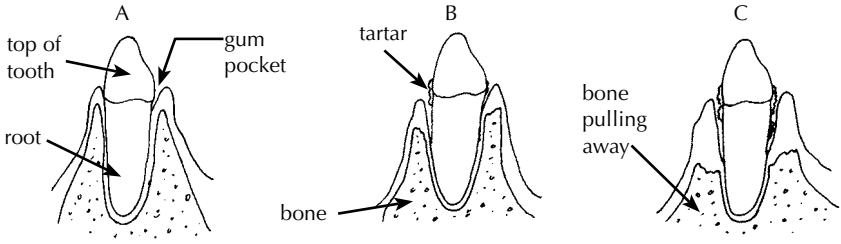




Front teeth need only one root because they are used for biting.

Back teeth have 2, 3, or even 4 roots. That makes them strong enough to chew tough meat and even break hard bone.

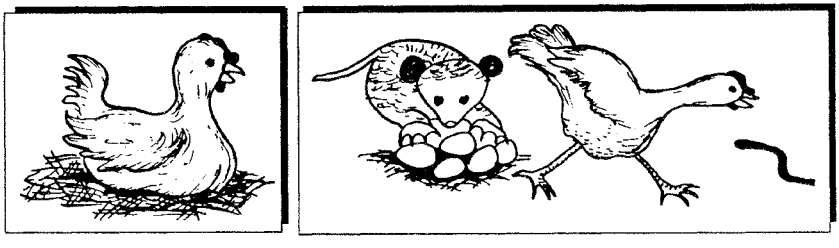
2. Show your students how infected gums can cause teeth to fall out.



A. When gum disease is beginning, a small red `pocket' forms where the tooth meets the gum. Germs and food collect in the gum and make acid. This makes the gums sore.
B. As a result, the gum pulls away and the pocket becomes deeper.
C. The bone moves away from the infection and no longer holds the tooth.

Try to think of other ways to teach how gum disease pushes the bone away from the tooth. In Jamaica, dental workers ask, "What do you do if someone attacks you with a machete (long knife)?" "I run away!" most people answer. "Exactly," say the dental workers, "and when you have a lot of germs attacking the root of your tooth, the bone 'runs away' and leaves the tooth with nothing to hold it."

Tell a story to show how, when the gum moves away from the top of the tooth, the root and bone are open to attack. For example:



One day, a hen was sitting on the eggs in her nest. The hen was hungry, and when she saw a worm, she left the nest to catch the worm. Just then, a possum came along, saw the fresh, warm eggs, and ate them all up.

Explain to the students that the gums protect the teeth the way a hen protects her eggs. When she leaves the eggs unprotected and exposed, an animal can attack and destroy them. When gums around a tooth are red and sore, the tooth is exposed to germs that can attack not only the top of the tooth, but also the bone and root.

How Often Do Teeth Grow In?

THE IDEA:

A child gets two sets of teeth. The first set, **baby teeth,** starts to grow when the child is a baby. The second and last set grows in at school age. They are the **permanent teeth.** Permanent teeth should last a lifetime.

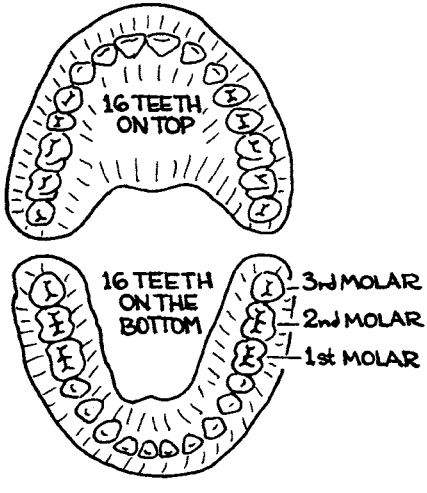
A child grows his first baby tooth at about 7 months of age. It is usually a front one.

A baby who is poorly nourished, however, may not grow his first tooth until later. Do not wait for the first tooth before giving him the extra soft food he needs to grow and stay healthy.

The remaining baby teeth grow in over the next 24 months. By the time the child is 30 months old, there will be a total of 20 baby teeth in his mouth, 10 on top and 10 on the bottom.

Most permanent teeth form under the baby teeth. When the child is between 6 and 12 years old, the permanent teeth push against the roots of the baby teeth, making them fall out. Not all of the baby teeth fall out at once. One tooth at a time becomes loose, falls out, and then is replaced with a permanent tooth. The new tooth may not grow in immediately. Sometimes 2 or 3 months pass before the new tooth grows into the space.

In the 6 years between ages 6 and 12, the 20 permanent teeth replace the 20 baby teeth. In addition, 8 other teeth grow in behind the baby teeth.



At 6 years the 4 first permanent molars start to grow in at the back of the mouth. This means an **8-year-old child should have 24 teeth, or spaces for them.**

At 12 years, the 4 second permanent molars grow in behind the first molars. This means a **14-year-old child should have 28 teeth, or spaces for them.**

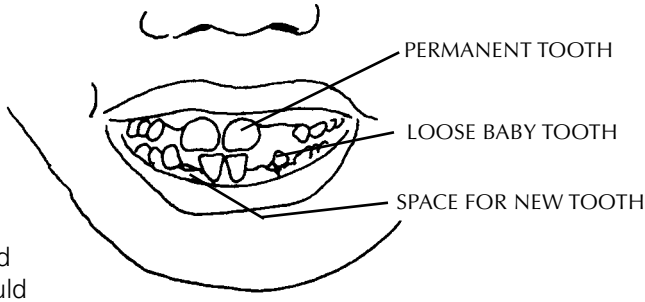
Between 16 and 22 years, the 4 third permanent molars grow in. This means that **an adult usually has a total of 32 permanent teeth: 16 on top and 16 on the bottom.***

*(Note: the third molars often do not grow in correctly. This is a very common cause of tooth pain. See page 66.)

THE ACTIVITY:

Have the students examine each other.* Help them learn which are baby teeth and which are permanent teeth. Look for the important 1st permanent molars at the back.

Show the students how to count the teeth and the spaces that are ready for new teeth to grow in.



Then have them count their friends' teeth, to find out how many teeth should be growing in different age groups. Later, they can do this with their brothers and sisters at home.

- Wash your hands.
- Count the teeth.
- Count the spaces where new teeth have not yet grown in.

  TOTAL = teeth + spaces
- Find out the person's age.

Have the students first write their totals on the blackboard. Then make a chart for the children to remember and discuss the results.

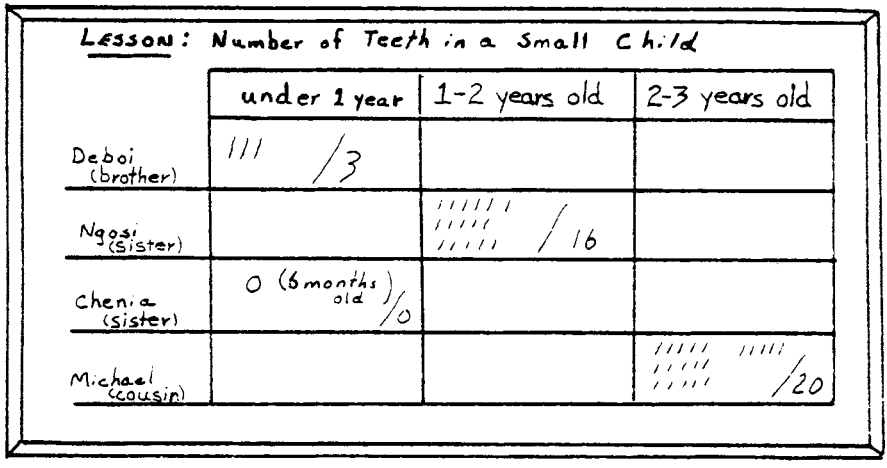
Lesson: Number of Teeth We Should Have

	TOTAL = teeth now present (T) + spaces (S)				
	under 6 years	6–8 years	9–11 years	12–16 years	over 16 years
Mita (girl)	20 T 0 S / 20 Total				
Joseph (boy)			18 T 6 S / 24 Total		
Saa (father)					27 T 5 S / 32 Total
Ambun (girl)				26 T 2 S / 28 Total	
Michael (boy)		22 T 2 S / 24 Total			

* Here the children are only counting the teeth. They can also learn to check for cavities and gum disease (see p. 49).

Discuss the number of teeth children have at different ages. Young children 6 to 12 years old, for example, have 24 teeth; older students, 28 teeth; and most adults, 32 teeth.

At home, students can count brothers' and sisters' teeth to learn how many teeth small children have. Count only the teeth and not the spaces.



Ask the students what other things they saw inside someone else's mouth. This is a good time for students to discover important things about good health practices. Encourage them to learn as much as they can from what they see, and then show them how to use a book like this to answer their own questions, For example, if students see cavities and red bleeding gums, you can start a discussion on tooth decay and gum disease. Use some of the activities on pages 55 to 60.

For another example, if the students see a baby who has only a few teeth, they may have some interesting questions. Show them this book and invite them to read pages 63 to 65 to find answers to questions like these.

- Can Chenia, who is 6 months old and has no teeth, eat soft foods? Should she have more than just breast milk?
- When Chenia's teeth grow in, will they give her diarrhea and fever?
- Will a 2-year-old girl get more baby teeth?
- Why do we care for baby teeth, when we only need them for a few years?

What Makes Teeth Hurt?

THE IDEA:

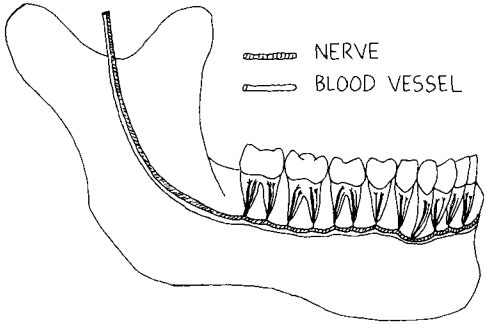
A tooth will hurt if it is broken, loose, or if it has a cavity. Cavities are the usual cause of toothaches.

Healthy teeth are alive.

Two thin strings enter each tooth. One, the **nerve,** come from the brain and carries the message of pain. The other is the **blood vessel.** It comes from the heart and carries blood to the tooth.

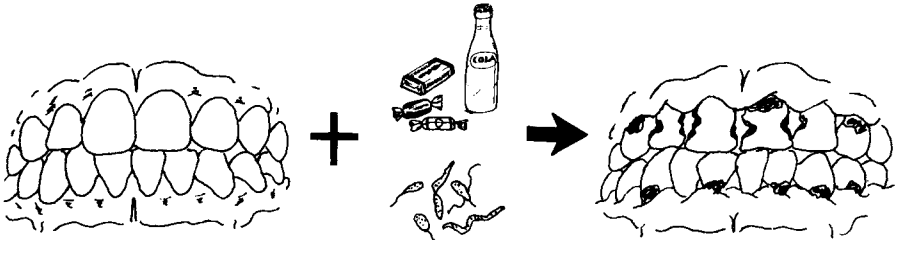
If you could peel away the gum and look inside the bone, you would see that a nerve and a blood vessel go into each one of a tooth's roots.

They give the tooth life and feeling.



The hard cover of the tooth protects the nerve and blood vessel inside it. But when tooth decay eats through that cover, the nerve and blood vessel are unprotected. A cavity lets food, water and air get closer to the nerve, and that can make the tooth hurt.

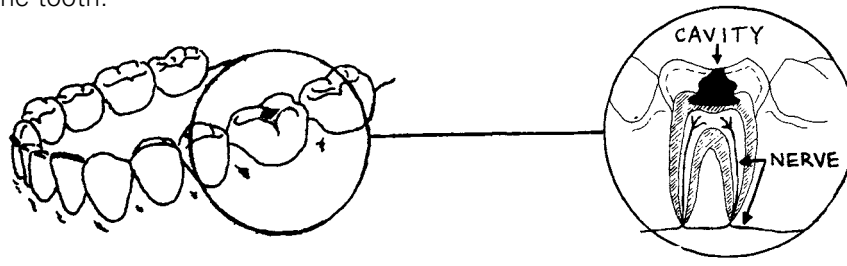
The sugar in food makes tooth decay possible. Sweet food that is also sticky is the worst of all because it glues itself to the teeth. Germs inside your mouth use the sugar to grow and to work harder at making cavities.



See the next section for more discussion of how germs and sugar combine to cause cavities.

A cavity may look small on the outside, but it is much bigger inside. Decay spreads more easily in the soft part under the hard cover of the tooth.

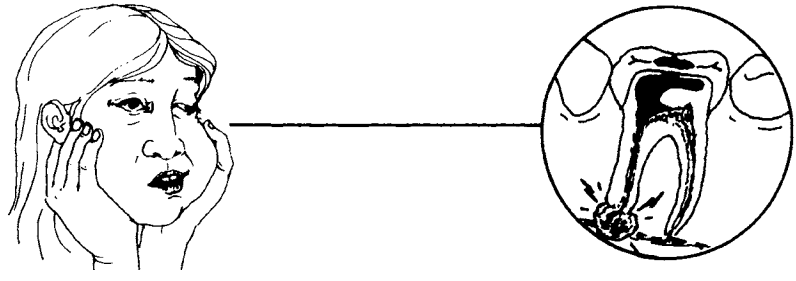
A tooth with a cavity may hurt, but it usually does not hurt all the time. This is because the bottom of the cavity is close, but not yet on the nerve inside the tooth.



Fill a small cavity and save a tooth.

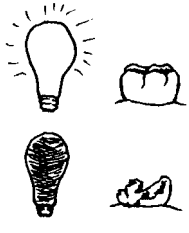
A small cavity that is not treated grows bigger and gets deeper. When the cavity finally touches the nerve, it causes a tooth abscess. Infection from the tooth decay going inside the tooth causes the tooth to ache all the time, even when you try to sleep.

Infection can pass from the tooth to the bone. As it spreads under the skin, there will be swelling of your face.



A tooth with an abscess must either be taken out or have its nerve treated.

An abscessed tooth is dying. When it dies the tooth changes color from white to dark yellow, grey, or even black. **Pus** from the end of its root can pass to the gum, making a sore called a **gum bubble.**



A tooth is like a light bulb.

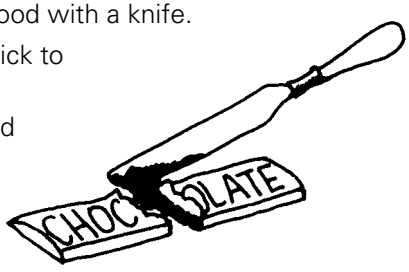
When the bulb is alive from power inside, it is bright and useful.

The little wires inside the bulb are like the nerves inside the tooth. When the bulb burns out, it is dark and not useful any more.

ACTIVITIES:

1. **Have each student look inside a partner's mouth.** Look for black spots that may be cavities, for dark teeth that are dead, and for sores on the gums, especially near a bad tooth.
2. **Discover how sweet food sticks to teeth.**

- Cut several different kinds of food with a knife.
- Vegetables and meat do not stick to the knife.
- Sweet foods, like chocolate and jam buns, do stick to the knife. They stick to your teeth the same way.



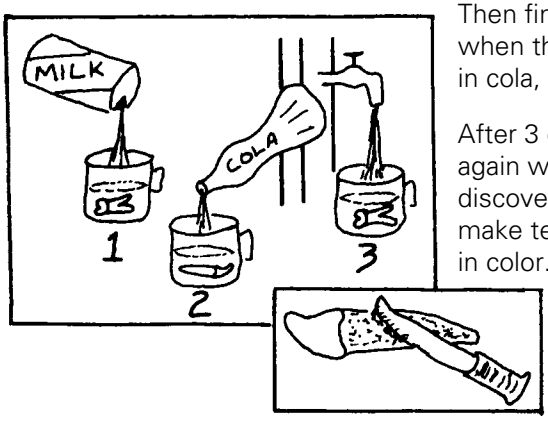
Pour some cola or juice in a dish, and leave it outside overnight.

As water is lost, the juice left in the dish becomes sticky. It attracts flies.

The air you breathe dries the cola and causes a sticky, very sweet coating to form on your teeth. It attracts germs.

Try to find some old teeth. Ask the students to keep their own baby teeth when they fall out. (Note: in some countries this is not acceptable.) Your dental worker can save you some teeth that were taken out at the clinic.

Scrape the outer cover of the root with a knife. Feel how hard and smooth it is.



Then find out what happens when the students leave a tooth in cola, milk, or plain water.

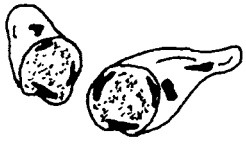
After 3 days scrape each tooth again with a knife. Students will discover that sweet cola drinks make teeth softer and darker in color.

3. **Look inside a tooth** for the space where the nerve and blood vessel used to be. See how close they were to the tooth's hard outer cover. Look for a small hole at the end of the root. That is the place where the nerve and blood vessel enter the tooth.

   Ask your dental worker to find an old tooth with a cavity and cut it for you.

   OR

   - Take a hammer.
   - Gently break open a tooth.
   - Look inside.

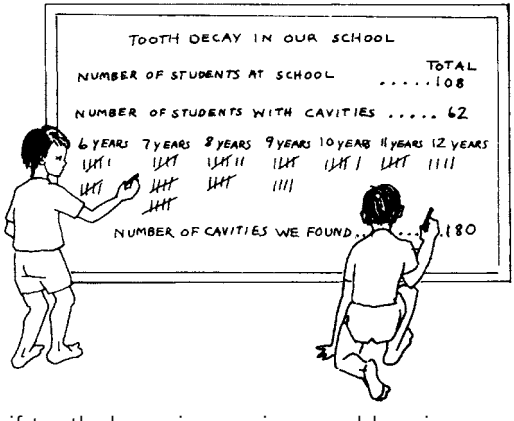
   See how much bigger the cavity is on the inside. It spreads under the hard cover.

   Cut through a rotten yam. See how the rotten part spreads under its skin in the same way.

4. **Do a project in class.**

   - Count the number of students with cavities.
   - Count the number of teeth having cavities. Show the students how to look for them on the tops, sides and between the teeth.
   - Find out the person's age.

   Have the students write on the blackboard what they counted. Then make a chart or graph.



   - Decide if tooth decay is a serious problem in your school. Ask your dental worker to look at your results and to come and treat the students, and help you prevent the problem from returning.
   - Do the same with brothers and sisters at home. Find out if tooth decay is a problem with these young children. Tell your dental worker what you find.

How Do Germs Make Holes in the Teeth?

THE IDEA:

Acid makes holes in the teeth. The acid is made when sweet foods mix with germs in your mouth.

It is not possible to prevent cavities or gum problems by trying to kill all of the germs in your mouth. There are too many—and some germs are good for you. The important thing is to **keep the germs from getting together** and making a film or coating on your teeth.

This film on the teeth is called **plaque**, but you do not need to use this word. Every morning we can all feel a 'furry film' on our teeth. This film must not be allowed to stay on the teeth! It will mix with sugar and make acid. Worse, if it stays in a group (or 'colony') for more than 24 hours, it will mix with saliva, harden, and make tartar (see page 52).

The main reason for cleaning teeth is to break up these colonies so they cannot make acid. Also, if you forget to clean your teeth, tartar will form, and you will need a dental worker to scrape it off. This is why it is important to clean your teeth at least every 24 hours, so the tartar can never form on your teeth.

THE ACTIVITY:

Here is a game called "Scatter!" that students can play outside. You need:

- Five 'bases' (a tree, rock, or the corner of a house can be a base) in a half circle, 12 meters apart. Each base must have a 'monitor' who stays at the base.
  Note: children who cannot run can be good monitors.
- One person with a broom. This person is the 'decolonizer'.

Children in Jocuixtita, Mexico, beginning a game of "Scatter!" The 'decolonizer' is the girl in the center with the broom.

The Game:
20 students called 'colonizers' stand facing the decolonizer. When the decolonizer says "go!" they try to 'form colonies' around the bases before the decolonizer can touch them with the broom.

The 'decolonizer' (with broom) has lost the game. The children behind him have formed a 'colony'.

Here the decolonizer stops a boy from completing a chain.

The colonizers win if they make a colony. There are two kinds of colony: **(1)** 15 people touching one monitor at a base, or **(2)** a chain of 12 people holding hands, touching two monitors.

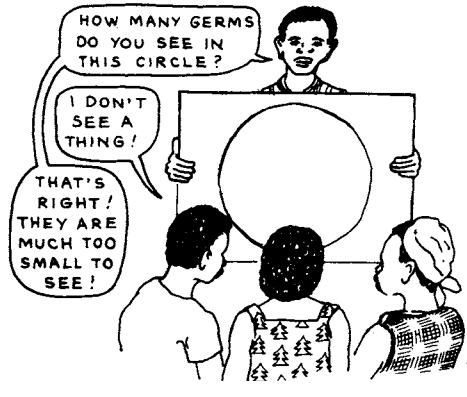
Play two games: one with children trying to form the first kind of colony, one with the second kind. These photos are from the second game.

The decolonizer tries to stop the others by touching them with the broom. When the decolonizer touches a colonizer with the broom, the colonizer must leave the area for one minute. (Give that child a task to do—run around the school-house or lie down and sit up 30 times.)

The decolonizer wins if no colonies form in 5 minutes.

After The Game:
Talk to the students about germs in their mouths and how small they are. Can anyone see germs? No, but they can feel them and taste them. Ask the group what their mouths feel like in the morning when they wake up. You may get these answers:

- My teeth feel mossy.
- My breath is bad.
- I feel a coating on my teeth, but it goes away when I brush them.



To teach about things too small to see, look at the suggestion on page **11**-29 of *Helping Health Workers Learn.*

Tell the students that this coating on the teeth is a 'colony' of germs. They are always trying to group together on the teeth or in spaces between the teeth—just as the 'colonizers' did in the game!

What Makes the Gums Feel Sore?

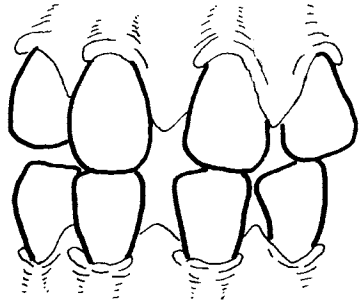
THE IDEA:

Healthy gums fit tightly around the teeth and help to hold them strongly. Healthy gums also cover and protect the bone under them.

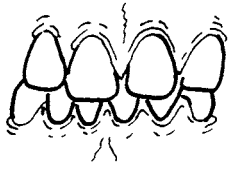
Healthy gums are pink in color, or even blue or dark yellow in some people. But healthy gums are **never red.**

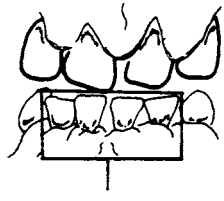
Healthy gums are pointed between the teeth. This lets food slide away and be swallowed.

Healthy gums fold under, making a little pocket around the tooth.



As we saw with the last activity (p. 50), when you have 'colonies' of germs on your teeth, they can make acid that makes holes on your teeth. The same coating of germs can make a different acid that makes the gums sore. This also happens when food mixes with the coating on your teeth. Soft food is the worst kind, because when it mixes with spit it sticks more and stays longer on your teeth. Juice from tea, betel nut, and meat color this food, making the tooth look dark.





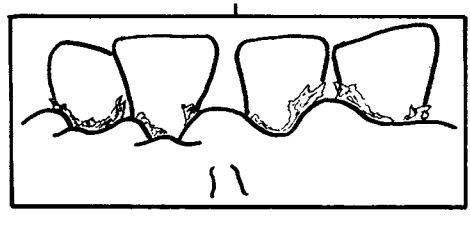
Healthy gums become sore because of acid. When the coating on the teeth (p. 50) becomes hard, it is called **tartar.** Tartar can hurt the gums. Also, the 'colonies' of germs can make a coating on top of tartar more easily than on a clean tooth. When the colonies are new, they make more acid which causes tooth and gum problems. After 24 hours, it hardens and makes a new layer of tartar. The tartar gets bigger and bigger.

Sore gums are infected. Infected gums are red and bleed easily.

Infected gums are round and swollen between the teeth.

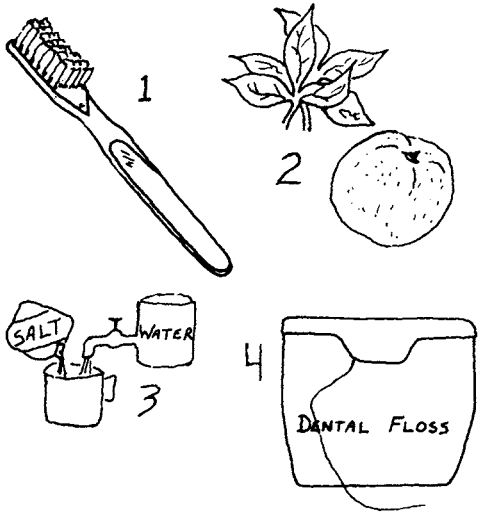
They are also loose instead of tight against the teeth.

Here is a larger picture of the teeth in the box above:



Infected gums have a deep gum pocket which catches even more food.

Infection in the gums is called **gum disease.** It is important to treat gum disease early, before it can spread to the root fibers and the bone.



If you have sore, bleeding gums, you can do much to treat the infection yourself.

1. Clean your teeth with a soft brush gently and more often (see page 71).
2. Eat more fresh fruits and vegetables.
3. Rinse your mouth with warm salt water.
4. Clean between your teeth with dental floss or string. At first your gums may bleed when you do this. But when the gums are stronger the bleeding will stop.

ACTIVITIES:

1. **Have the students look in each other's mouths.** Can they see the coating on the teeth? Usually they cannot. They may see food or 'white stuff', but this is not the coating that makes acid. However, if someone has been chewing betel nut or eating berries, you will see stains on her teeth **and the stains will be darkest** where she has these colonies of germs on her teeth.

2. **Put something on the teeth to stain the colonies of germs.** Try using food dye, betel nut or berry juices. Remember: first wash your hands! Older students can rub berries on the teeth of the younger ones. Have them rinse with a little water and spit it out. After this, the colored areas on the teeth will show where the colonies of germs are forming. Where are they? Usually you will see the dark colors:
   - between the teeth
   - in the pits or holes in the teeth
   - on the tops (biting surfaces) of the teeth.

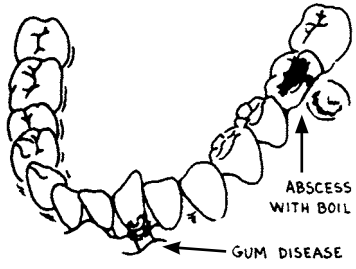
   The older students can show the younger ones the best way to clean teeth (see pages 69–72). Have them use a mirror to see if they are getting the colored juice from their teeth. They will learn that it is most difficult to get rid of the color between their teeth. Give them some string, dental floss, or the soft stem from a young palm leaf and show them how to use it between their teeth (p. 72). Remind them to be gentle, or they will hurt their gums. **Clean between your teeth every day.**

What Does It Mean if a Tooth is Loose?

THE IDEA:

Baby teeth become loose when children are between 6 and 12 years old. This is normal. If a loose baby tooth does not have a cavity, and if the gums around it are healthy, there is probably a permanent tooth growing under it.

But a tooth might be loose because it is broken or because it is sick from an abscess or gum disease. Either can destroy the bone around the tooth's roots.



When bone is lost, the tooth becomes loose. A loose tooth hurts and usually must be taken out.

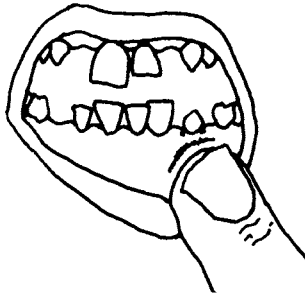
There is no medicine to make bone grow back around the roots of loose teeth. All you can do is stop the infection from getting worse.

ACTIVITIES:

1. **Let the students look into each other's mouth** for loose baby teeth. Look carefully to see why a tooth is loose.

   Touch the gum and bone beside the loose tooth. You can feel a bump—it is the new permanent tooth growing.

   Save the baby tooth after it has fallen out. Look to see how the permanent tooth has eaten away its root by pushing against it.



2. **Look for teeth that have cavities or gum disease around them.** The students can do this with each other, and then later at home. (Remember they must wash their hands!)

   A tooth that has some of its root showing is probably loose.

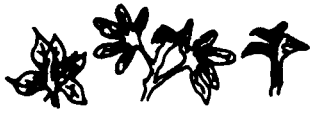
   Using your fingers or the handles of two spoons, rock the tooth back and forth gently. See how much it moves, and ask how much it hurts.

   Tell the person what he can do to prevent other teeth from becoming loose. (See the next section.)

How Can We Prevent Cavities and Sore Gums?

Eating good food and carefully cleaning the teeth prevents both tooth decay and gum disease.

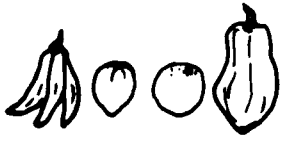
Food from your own garden and local food from the market is best. These foods are good for your body, your teeth, and your gums.



Vegetables, especially those with dark green leaves.

Peas and beans, like green beans, soybeans, winged beans, and mung beans.

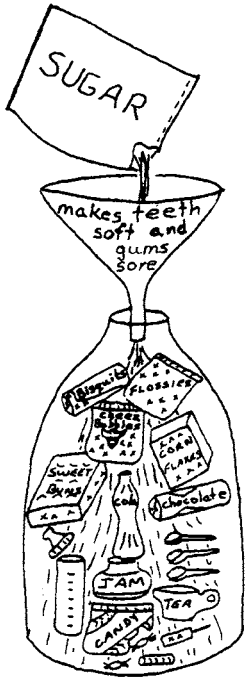
Oil, from palm nut kernels, ground nuts, and coconut.



Fruits, like banana, guava, oranges, and papaya.

Fish, meat and eggs.

Clean water, coconut water, and milk are best to drink.



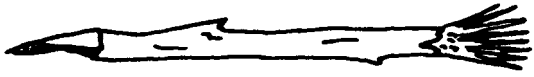
Soft foods and sweet foods from the store are not good for you. Soft foods stick to your teeth easily. They can work longer to cause cavities and infected gums. Sweet foods have mostly sugar in them, and it is 'factory sugar', not the 'natural sugar' that is in the foods in the pictures above.

This kind of sugar is quick to mix with germs and make acid. Remember: natural sugar makes acid slowly; factory sugar makes acid quickly.

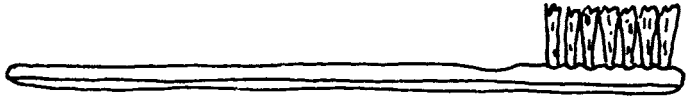
Children who eat a lot of sugar lose their appetite for other foods—the foods that help them grow strong, stay healthy, and learn well in school.

Store foods are also expensive. You can usually get better food, and more of it for the same money, from your garden or in the market.

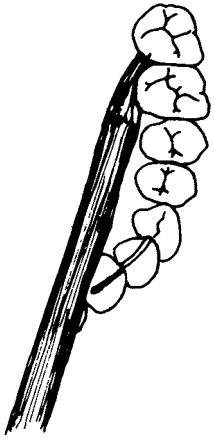
Cleaning your teeth carefully every day is another important way to take care of both teeth and gums. **However, cleaning teeth is like building a house. To do a good job, you need to work slowly and carefully.** Once a day is enough, if you clean your teeth well every day.



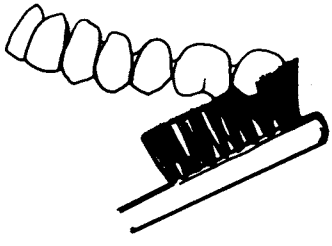
Buy a brush from the store, or make one yourself (see p. 4). But be sure the cleaning end of the brush is soft so that it won't hurt the gums.



Use your brush to clean all the teeth, especially the back ones with the grooves. Back teeth are harder to reach and so it is easy not to clean them well enough. Cavities start from sweet food and germs left together inside the grooves.



1. Scrub the inside, outside, and top of each tooth.
2. Push the hairs of your brush between two teeth. Sweep the food away.
3. Wash your mouth with water, to remove any loose bits of food.



Small children are not able to clean their teeth carefully enough by themselves. They need help. Look at the pictures on the cover and p.18 to see how you can do this. **Older children can care for younger brothers and sisters at home.**

ACTIVITIES*:*

One of the best ways to teach is by example.

Students will believe what their teacher says if they know he eats good food and cleans his teeth.

The reverse is also true. Learning is harder when students know that their teacher does not do those things himself.

Students can be a good example for their community, too. They can:

- draw pictures of foods that are both good and bad for teeth. Use them to make posters and flannel-board stories.
- make puppets and plays to discuss ways people can become healthier.

There are some other ways to make learning meaningful and fun.

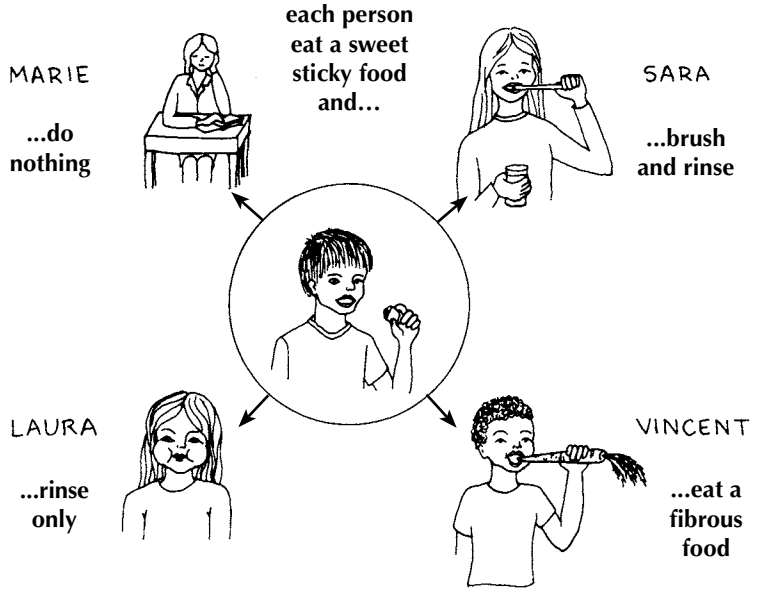
1. **Make a garden at school.** Divide the ground so that each class has its own space to plant a garden.

   Use some of the garden's food to prepare a meal for the students, perhaps once a week. Students can bring food from home if there is not enough ready in the garden.

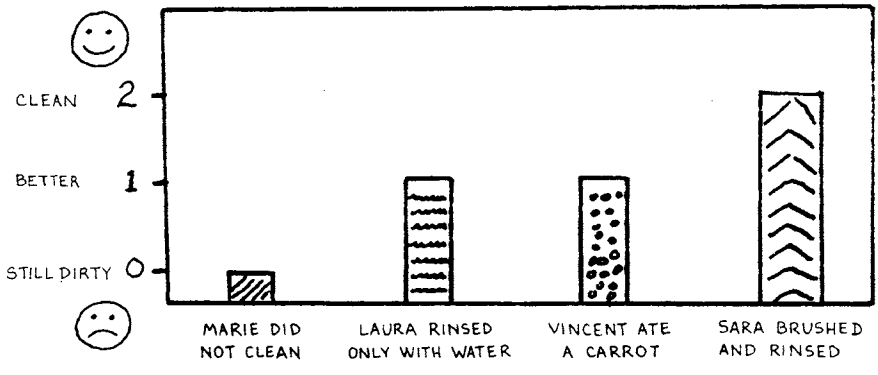
2. **Organize a school lunch program.** Each day the students can bring some good food from home. Cooked yams, or maize, nuts, fruit and fresh vegetables are all good. Often the students will exchange food and talk about the many different foods that can be grown locally.

3. **Find the best way to clean teeth.** Divide the class into groups. They will learn more easily in a small group of 4 to 8 students.

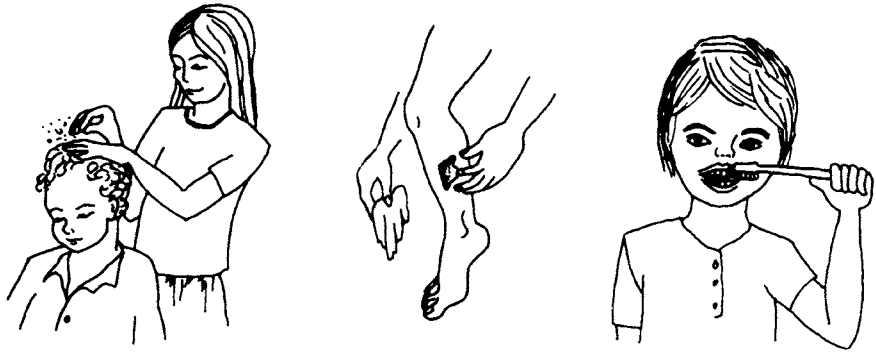
   Give all the students something to eat that is sweet, sticky and dark in color, such as sweet chocolate biscuits. Ask the students to look in each other's mouth, to see how easily the biscuit sticks to the teeth. One or two of the students in a group can then try to clean away the pieces of biscuit, using a different method.



When they are finished, the students can look at the teeth to decide if they are clean or not. Put your findings on a chart and talk about what you have learned.

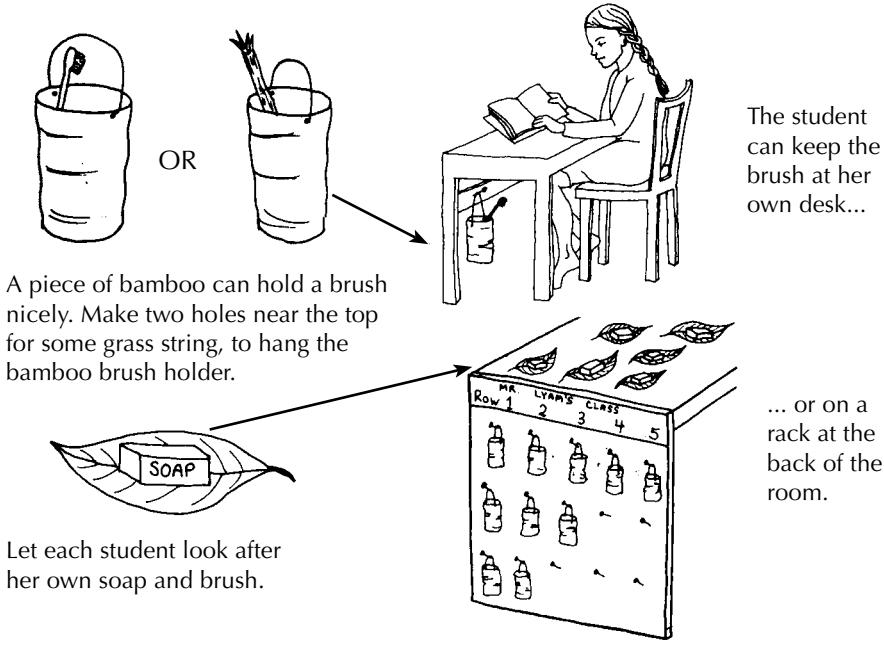


4. **Make cleaning part of a daily health activity.** Older students can look after younger students. They can first check their hair for lice, then sores for infection, and teeth for old food or germs. (To see the coating of germs on the teeth, try the activity on page 53.) One partner can point out to the other where washing and brushing can be done better.

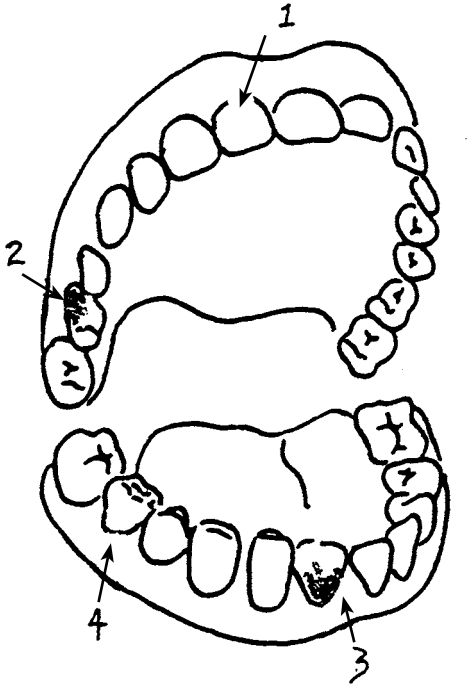


CLEANLINESS CAN BEGIN AT SCHOOL

At school, students can wash their hands before lunch and brush their teeth afterward. Encourage them to keep a piece of soap and a toothbrush or brushstick (p. 4). One day a week, the whole class can treat their teeth with fluoride (p. 205) to prevent cavities.


OR
A piece of bamboo can hold a brush nicely. Make two holes near the top for some grass string, to hang the bamboo brush holder.
The student can keep the brush at her own desk...
... or on a rack at the back of the room.
SOAP
Let each student look after her own soap and brush.
MR LYAM'S CLASS
Row 1 2 3 4 5

Have the students score each other's progress. Do not make it hard to judge, or they will not do it. In the example below, the tooth is either clean or net clean.



SCORING TEETH

Pick 4 teeth, a back tooth and a front tooth—two on top and two on the bottom.

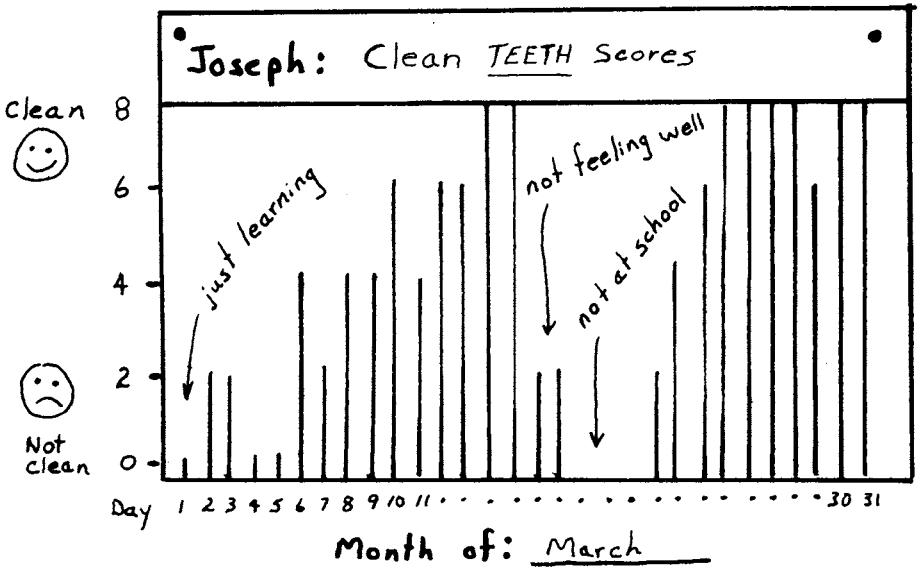
Use the same 4 teeth for each person. Look for food on each tooth near the gums.

A clean tooth = 2 points.
A dirty tooth = 0 points.
Total possible points each day is 4 teeth x 2 = 8 points.

In this example the score is:

Tooth 1	= 2 points
Tooth 2	= 0 points
Tooth 3	= 0 points
Tooth 4	= 2 points
Total	= 4 points

Have each student put his daily score on a chart. At the end of the month he can see how much he has improved.



CHAPTER 5

Taking Care of Teeth and Gums

We can prevent most tooth and gum problems. This chapter gives more information about how teeth grow in and how to keep teeth and gums healthy. Share this information and you will prevent problems from starting.

But remember that people are most interested in the problems they have **now.** Before listening to what you know about prevention, people will want treatment for the problems that are already causing them pain and discomfort.

Early treatment is a form of prevention. It can prevent a tooth or gum problem from becoming more serious.

When you treat a person's problem, it shows that you care about him. It also shows that you know what treatment he needs. As his confidence in you grows, he will want to learn from you about preventing tooth or gum problems.

In order to help a person it is important to know what the problem is and what is the best treatment. But just as important is knowing what you are not able to do, and when to seek help.

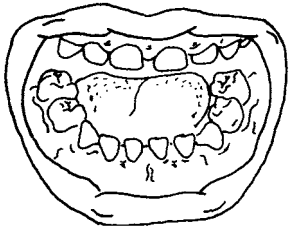
In this chapter, you will learn more about teeth, gums, and problems affecting them, but you must never be too proud to get help from more experienced dental workers.

Know your limits.

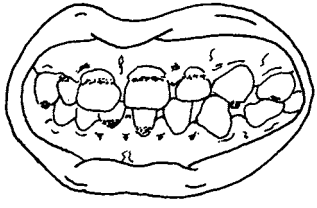
TAKING CARE OF BABY TEETH

A child's baby teeth are being made before birth while the baby is still inside the mother's womb. During the last months of pregnancy and the first few months after the child is born, the baby teeth take their final form. **Pregnant mothers and young children need good food and good health in order to have strong baby teeth.**

Strong teeth
are white and their
front surface is smooth.



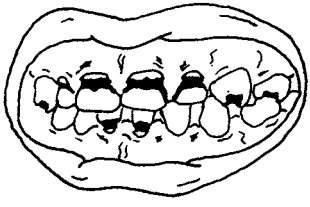
Weak teeth
have yellow marks that
are pitted and rough.



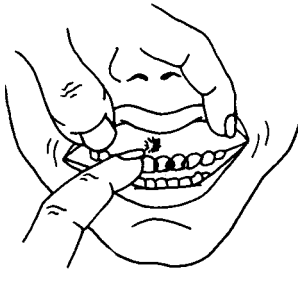
Baby teeth get marks on them when: **1)** the pregnant mother is sick or does not eat good food; **2)** the young baby is sick or does not eat good food; or, sometimes, **3)** the baby's birth was early or the delivery was difficult.

The marks are rougher than the rest of the tooth. Food sticks easily to them and turns the tooth yellow.

The marks are also soft. They need to be cleaned well every day (p. 63) to prevent them from becoming cavities. A tooth with a cavity hurts. When children's teeth hurt, they do not want to eat as much.



Cavities in baby teeth can make a child's malnutrition worse. Remember this whenever you see a weak, poorly nourished child. When you examine a child at the health clinic, lift his lip and look at his teeth. Do **this as part of your routine examination.**



You can fill cavities with cement (Chapter 10). Cement prevents food and air from going inside the cavity and hurting the child.

A sore on the gums may be a gum bubble. If so, it means the tooth has an abscess (page 81). That cavity should not be filled with cement. Instead, the tooth needs to be taken out (Chapter 11) before the infection can get worse.

For baby teeth to grow strong, mother and baby must stay healthy.* Help her to understand how important this is. A pregnant mother should:

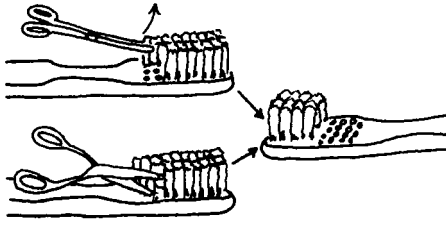
- Eat enough good kinds of foods, both for herself and her baby growing inside (page 68; also see *Where There Is No Doctor,* Chapter 11, and *Helping Health Workers Learn,* pages **25**-39 to **25**-44.)
- Attend health clinic each month, so the health workers can examine her regularly and she can receive important medicines (see *Where There Is No Doctor,* page 250).
- Not use the medicine tetracycline, because it can cause the teeth to turn dark. You, the health worker, must remember—**do not give tetracycline to a pregnant woman or to a young child.** If she needs an antibiotic, use a different one.

For baby teeth to stay strong, and to prevent marks from turning into cavities, mother should:

- Continue to breast feed and **never feed her child juice or sweet tea from a bottle.** Start adding soft foods, such as mashed banana or papaya, when the child is 6 months old.
- Wipe her baby's teeth with a clean cloth after the baby eats. This cleans the baby's teeth, and helps the baby get used to teeth cleaning. Later he will be happy with a brush.

Around 1 year of age, there will be several baby teeth. At that time, mother should start using water—not toothpaste—on a soft brush or brushstick. (With toothpaste, you cannot see the child's teeth clearly because of the bubbles it makes.) She should scrub the sides and tops of each baby tooth as well as she can (page 69).

The child can also try to clean his own teeth. That should be encouraged. However, since he is too young to clean properly, mother (or father, or older brother, sister) must clean his teeth once a day for him. Continue helping in this way until the child is old enough to go to school.



You can make a large brush smaller, to fit more easily into a young child's mouth.

Pull out some of the back hairs, or cut them out with scissors. Do not cut the hairs in half, because the tops are often rounded or softer, and that is better for the gums.

*See the story about pregnancy and dental care on pages 15–16.

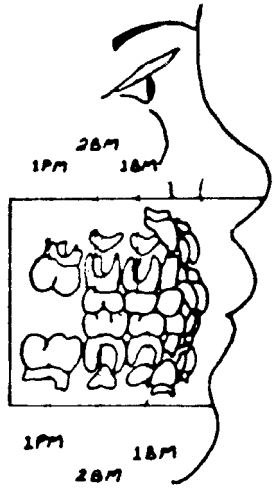
Why Baby Teeth Are Important

Baby teeth are just as important to children as permanent teeth are to adults. They help a child to eat, talk, and look good.

However, many people feel that it is not worth the effort to look after baby teeth. Nor is it worth fixing them. After all, parents think, the permanent teeth will take their place.

This kind of thinking is understandable. The problem is that we are forgetting one other useful purpose of baby teeth. **Baby teeth keep space in the mouth for the permanent teeth to grow in**. If there is not enough space, the new teeth will grow in crooked, and cavities grow faster around crooked teeth.

Permanent molars (PM) come in behind the baby molars (BM).

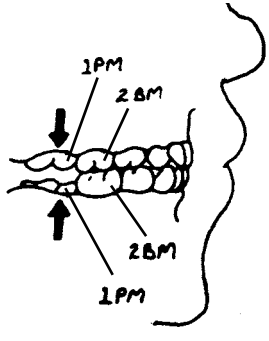


Under each baby tooth a new permanent tooth is growing.

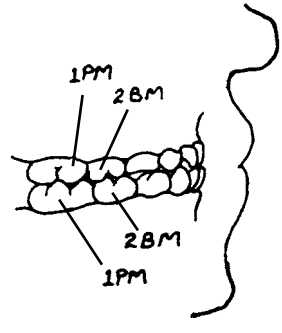
At the same time, extra permanent molars are forming at the back of the mouth, inside the bone (page 43).

Front baby teeth become loose and fall out (usually 6–7 years, but sometimes as young as 5 years) ahead of back baby teeth (10–12 years). This is because the front permanent teeth are formed and ready to grow in first.

The permanent molar (1 PM) is often the first of the permanent teeth to grow into the mouth. That happens at 6 years of age.



The first permanent molar grows into the mouth by sliding against the back of the second baby molar (2BM).

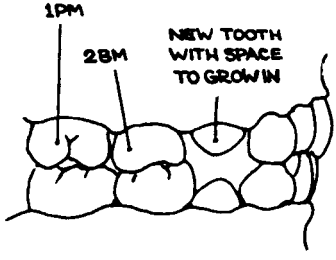


Slowly but steadily the upper and lower permanent molars grow until they meet and fit tightly together.

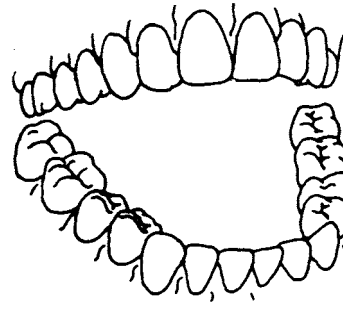
Between the ages of 6 and 11, a child needs healthy baby molars to guide the first permanent molars into position and then to hold them there. When the first permanent molars grow into the right place, this is a good sign. It means the other permanent teeth will also grow in properly, because they will have enough space.

Note: Some people are born without enough space. But most people are not born with this problem—they lose the spaces when they remove baby teeth instead of fixing them.

HEALTHY BABY TEETH —— help to make ——→ STRAIGHT PERMANENT TEETH

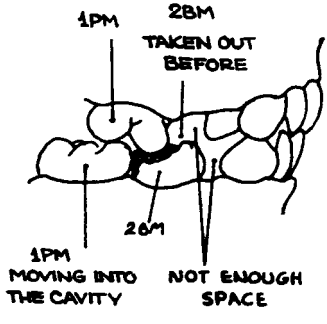


10 years

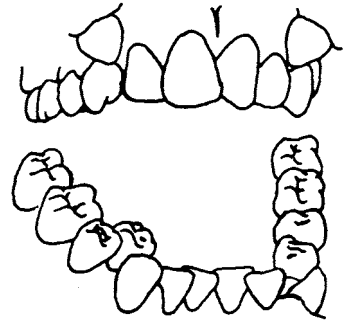


adult

SICK BABY TEETH —— help to make ——→ CROOKED PERMANENT TEETH



10 years



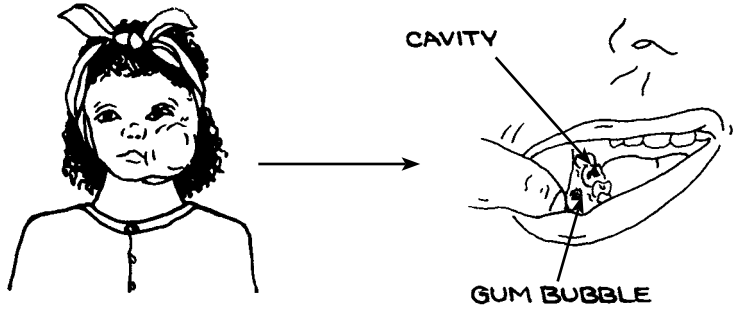
adult

Tell mothers why baby teeth are important. Good food and regular cleaning keep them healthy. They should know that **new teeth coming in do not cause diarrhea and fever,** but that a child may have diarrhea or fever at the same time.

If there is a cavity, fix it so the tooth can be kept in the mouth to do its important work (see Chapter 10).

TAKING CARE OF MOLAR TEETH

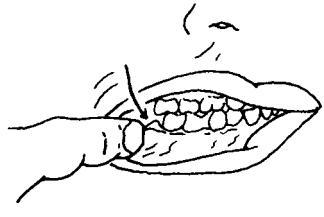
We often notice front teeth growing in, but not the back ones. Back teeth molars are not so obvious. **Swelling on the face** can be either a new molar growing in or an abscess. So, to help you to decide, look at the tooth for a cavity and at the gums beside it for a gum bubble.



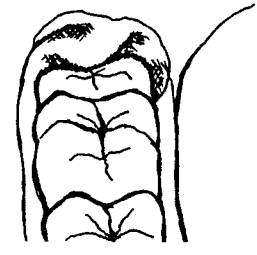
When you see a swollen face, look for the two signs of an abscess.

But if the person is young (16–22 years), it often is not an abscess. The third permanent molar tooth may be growing in at the back of her mouth. As the tooth grows, it cuts through the skin. Just as a dirty cut on a person's hand can get infected, the cut gum around her new tooth also can get infected, causing a swollen face.

Look behind her back teeth.



See the red swollen skin on top of the new tooth.



If there is enough space for the tooth, it will grow in by itself. It only needs time. Before acting, decide how serious the problem is.

If there is no swelling and she can open her mouth, explain to her what is happening and what she can do herself to reduce infection and toughen the gums. The best medicine is to rinse warm salt water over the sore area. A good home remedy is to rinse until the tooth grows all the way into the mouth.

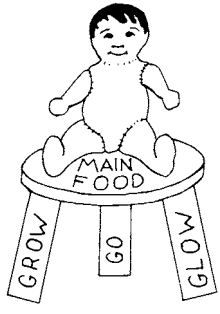
If it does appear serious (severe pain, swelling, not able to open the mouth), see page 94 for further treatment.

TAKING CARE OF ALL YOUR TEETH

This book often repeats an important message: **eat good food and clean your teeth**. It is repeated because **this is the most important thing you can learn from this book**. Later chapters will discuss what to do when problems occur, but if you follow these two suggestions, you will almost never have problems with your teeth and gums. This is true because good food keeps your whole body healthy, including your teeth. Also, with no 'colonies' of germs (page 50) or harmful factory sugar (page 55) on your teeth, your mouth cannot make the acids that cause both tooth and gum problems. So, remember:

1. Eat Good Food

An easy-to-remember rule is **the same foods that are good for the body are good for the teeth.** A healthy body is the best protection against infection.

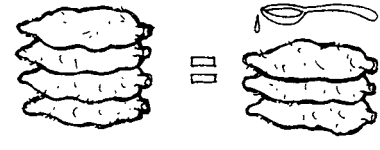


The MAIN FOOD is at the center of every meal.

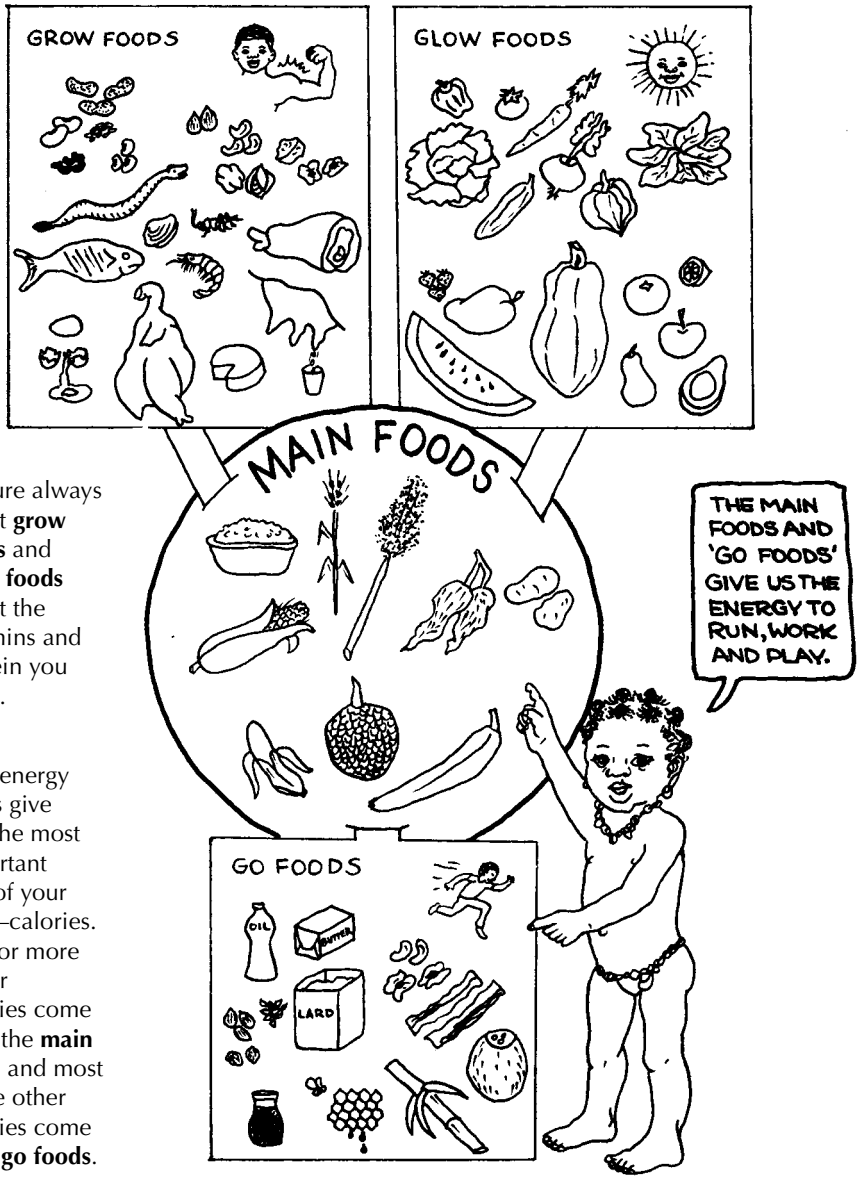
Good nutrition (eating well) means 2 things:

1) **Eat a mixture of different kinds of foods every time you eat.** Look at the pictures on page 55. There are several groups of foods. Every time you eat, try to eat one or two foods from each of the groups. This way, you will get 3 important kinds of food: **grow food** (body-building food) to give you the protein you need; **glow food** (protective food) to give you vitamins and minerals; and **go food** (concentrated energy food) to give you calories to be active all day.

2) **Be sure you eat enough food to give your body the energy it needs.** This is even more important than the first suggestion. We get half or more of our energy from our **main food**. In most parts of the world, people eat one low-cost energy food with almost every meal. Depending on the area, this **main food** may be rice, maize, millet, wheat, cassava, potato, breadfruit, or banana. The **main food** is the central or 'super' food in the local diet.



A spoonful of cooking oil added to a child's food means he only has to eat about ¾ as much of the local main food in order to meet his energy needs. The added oil helps make sure he gets enough calories by the time his belly is full.



Be sure always to eat **grow foods** and **glow foods** to get the vitamins and protein you need.

Your energy foods give you the most important part of your diet—calories. Half or more of our calories come from the **main food**, and most of the other calories come from **go foods**.

WARNING ABOUT **GO FOODS:** Although **go foods** give us the energy we need, some **go foods** are worse than others. Honey, molasses, and especially white sugar can be very bad for the teeth, even though they have the calories we need. Fruits, nuts, and oils all give us energy (calories) without attacking the teeth.

2. Clean Your Teeth

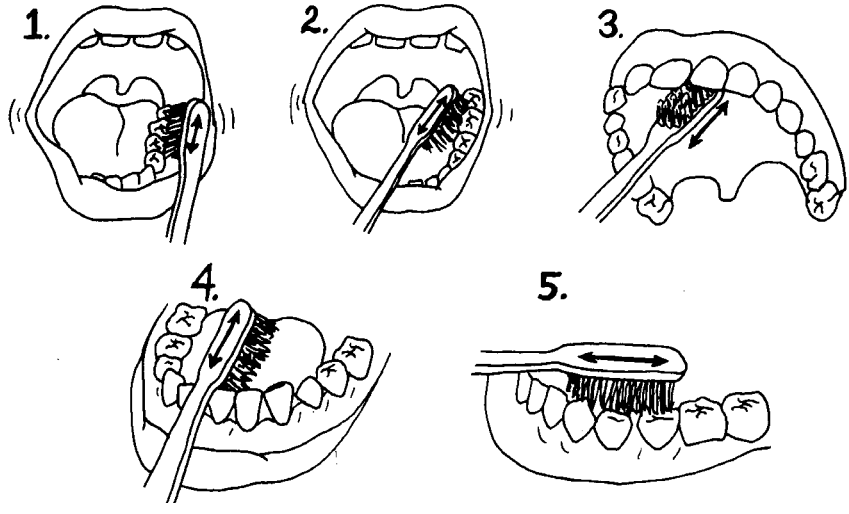
Cleaning teeth requires time and care. If you hurry, you will leave food and germs behind, and they continue to make cavities and sore gums.

You may find that different dental workers recommend different ways of brushing teeth. Some ways are definitely better, but often they are harder to learn.

Teach a method of cleaning that a person can learn and will do at home. Let him start by scrubbing his teeth (and his children's teeth) back and forth, or round and round. Encourage him to improve his method only when you think he is ready.

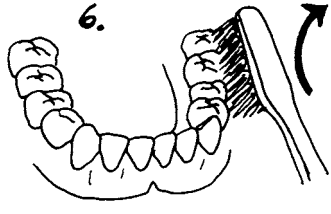
Toothpaste is not necessary. Some people use charcoal or salt instead. But it is the brush hairs that do the cleaning, so water on the brush is enough.

Scrub the outside, inside, and top of each tooth carefully.



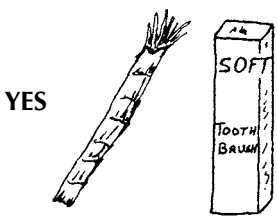
When you finish, feel the tooth with your tongue to make sure it is smooth and clean.

Finally, push the hairs of the brush between the teeth and sweep away any bits of food caught there. Do this for both upper and lower teeth.



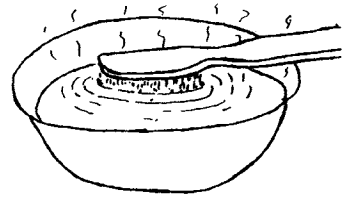
Sweep away in the direction the tooth grows: sweep upper teeth down and lower teeth up.

Explain how important it is to use a brush with soft hairs. A brush that is stiff and hard will hurt the gums, not help them.



You can make a hard brush softer by putting the hairs into hot water for a few minutes.

Do not put the plastic handle into the hot water, or it will melt.



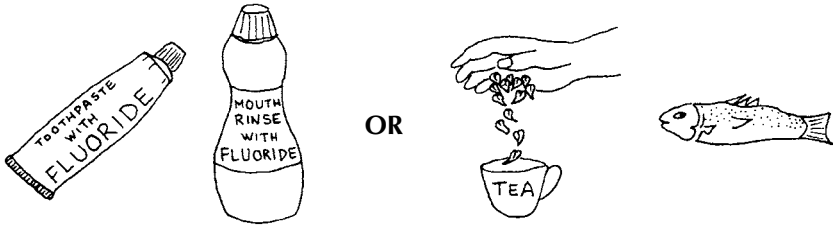
If your store has only hard brushes, tell the store keeper that hard toothbrushes do not help the people in the community. Ask him to order and sell only soft toothbrushes.

Note: **Another important way to reduce cavities is by adding fluoride to teeth.** Fluoride is a substance which, like calcium, makes teeth harder and stronger.

Fluoride in drinking water, toothpaste, salt, vitamins, and mouth rinses helps to prevent cavities. These methods are sometimes expensive. But treating teeth once a week with fluoride toothpaste is effective and inexpensive. See page 205.

Fluoride can also be found naturally in food and water. For example, tea leaves and most foods from the sea contain a large amount of fluoride.

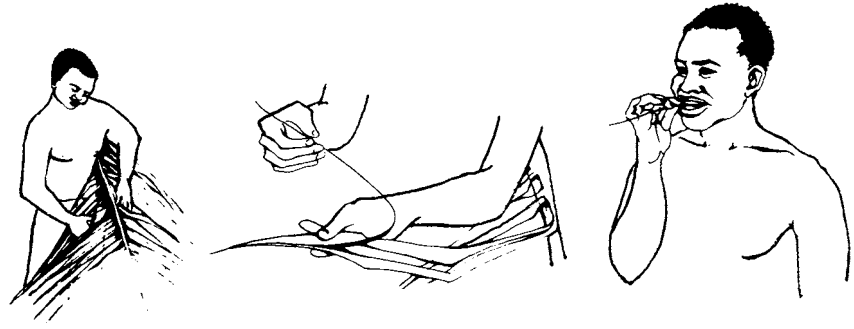
So, your source of fluoride can be either:

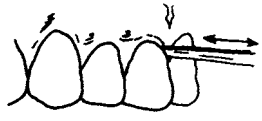


CLEANING BETWEEN THE TEETH IS VERY IMPORTANT

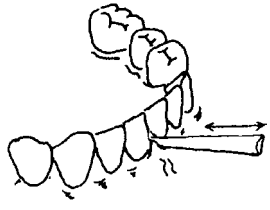
Here are three ways to clean between the teeth:

1. Push the hairs of a toothbrush between the teeth, and sweep the bits of food away.
2. Remove the stem from a palm leaf. Use the thinner end and move it gently in and out between the teeth.

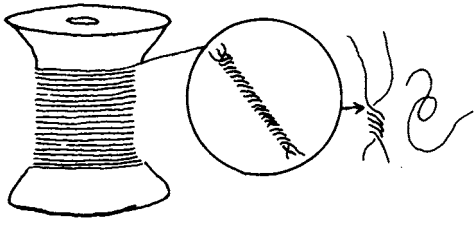




Rub the stem against one tooth and then the other. This way, you clean the sides of both teeth.

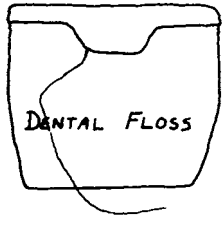


3. Use some thin but strong thread or string. String can be the best method of all—but you must be careful with it.



Get some thin cotton rope used for fishing nets. Unwind and use one strand of it.

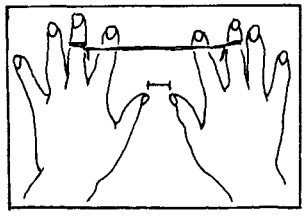
OR



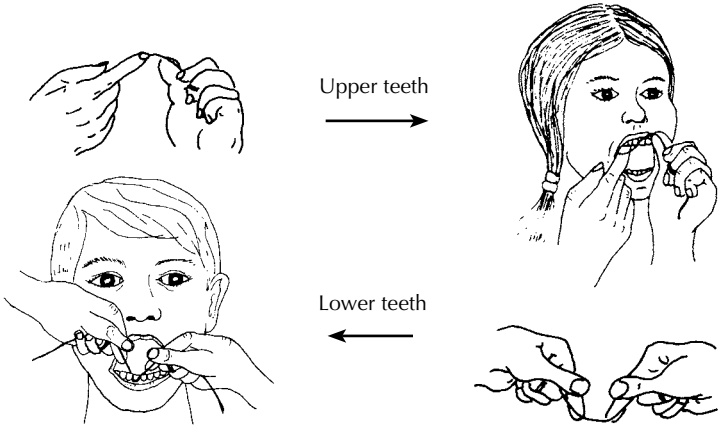
Buy and use **dental floss.** This is a special kind of string for cleaning between the teeth.

Be careful! The string can hurt your gums if you do not use it correctly. The next page shows how to use the string, but **the best way to learn how to 'floss' your teeth is to have someone show you.** Ask a dental worker who has experience.

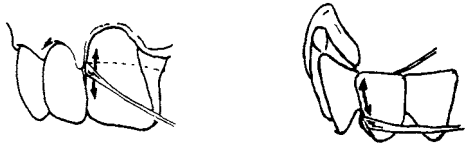
Wrap the ends of the string around the middle finger of each hand.



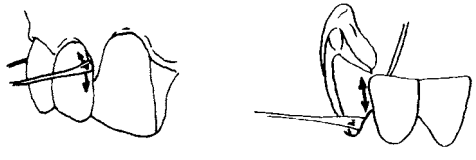
Use the thumb and finger to guide the string. Go back and forth to slide the string between two teeth. Be careful not to let it snap down and hurt the gums.



With your fingers pull the string against the side of one tooth. Now **move the string up and down. Do not pull the string back and forth** or it will cut the gum.



Lift the string over the pointed gum and clean the other tooth.



When you have cleaned both teeth, release the string from one finger and pull it out from between the teeth. Then wrap it around your two middle fingers once again, and clean between the next two teeth.

Remember: clean teeth and good food will prevent almost all dental problems.

CHAPTER 6

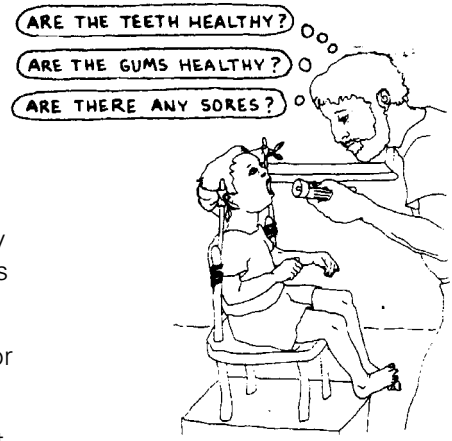
Examination and Diagnosis

Whenever you do an examination, remember to examine the mouth.

You can prevent much suffering and serious sickness when you notice and treat problems early. Whenever you hold a health clinic, try to find out how healthy each person's mouth is.

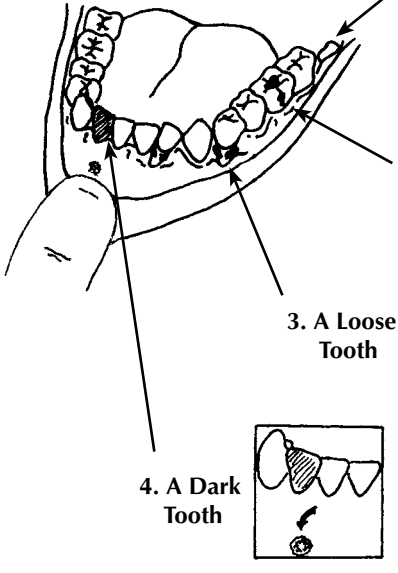
Ask if she is having a problem now, or has had a problem recently.

Always write down what you find out, so you remember what treatment that person needs.



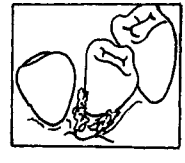
When you look inside someone's mouth, ask yourself these questions.

1. Are the teeth healthy? Look for:



Tell the person what is happening and how to keep the skin around it healthy (page 66).

They may be cavities which should be filled when they are still small (page 47).



Tell the person what is happening and how to prevent it from getting worse or affecting other teeth (page 54).

A tooth that is dark is dead and infection from its root can go into the bone (page 47). This can make a sore on the gums (page 74).

2. Are the gums healthy?

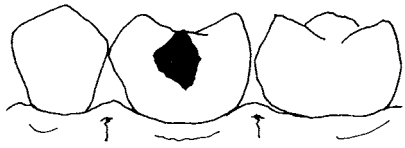
Look at page 52 and compare the pictures of healthy and unhealthy gums. **Unhealthy gums often are red and they bleed when you touch them.**

A bubble on the gums below the tooth is a clear sign that the person has an abscess. The abscess may be from the tooth, or it may be from the gums. To decide, look carefully at both the tooth and the gum around it.

A bubble beside a healthy tooth is a sign of infected gums. Scale the tooth carefully. See Chapter 8.

A bubble beside a decayed tooth is a sign of a tooth abscess. (See page 93.)

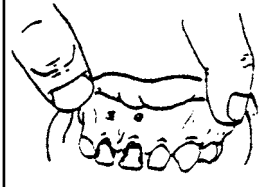
A sore on the gums from a badly decayed tooth appears when a gum bubble breaks open and lets out the pus from inside.



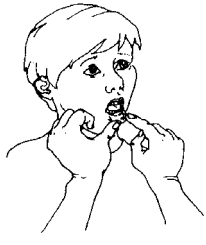
GUM BUBBLE

3. Are there any sores?

Look for sores under the smooth skin on the inside of the lips and cheeks. Look also under the tongue and along its sides.



1. A sore on the gums may be from an infected tooth (p. 93).



2. Sores on the inside of the lip or cheek may be from a virus (p. 104).

3. Sores on the lips or tongue may may be cancer (p. 125).

After your examination, tell the person what you have found. If you notice a problem starting, explain what to do to prevent it from getting worse. If there are no problems and the mouth is healthy, congratulate the person.

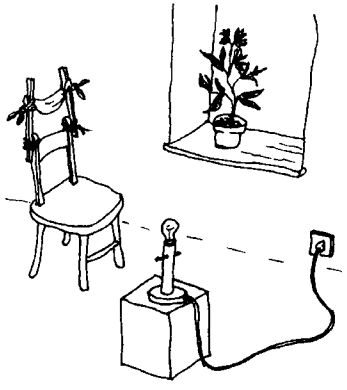
Share your knowledge—explain things to people. Help them learn how they can prevent and even manage their own problems with their teeth.

WHERE TO EXAMINE

Examine people in a light and bright place. It is dark inside a person's mouth, so you need light to see the teeth and gums.

Use the sun. Examine outside, or inside a room facing the window. With sunlight alone, you will be able to see most places in the mouth well enough. If you cannot, set up a lamp or have someone hold a lamp for you. Reflect the light off a small mouth mirror onto the tooth or gum.

If you have a low chair, lift up the person's chin so that you do not have to bend over as far when you look into the mouth. An even better way is to have the person sit on some books. The person's head can lean back on a piece of cloth.

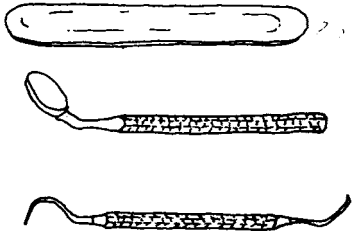


Use an old chair with a strong back.

Attach two flat sticks to the chair. Then tie a strip of clean cloth to the sticks. Tie it strong enough to support the head, but loose enough to let the head lean back.

THE INSTRUMENTS YOU NEED

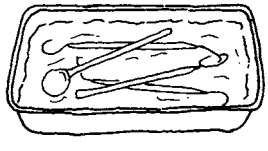
Three instruments are really enough:



1. A wooden tongue blade to hold back the cheek, lips, and tongue.
2. A small mirror to let you look more closely at a tooth and the gums around it.
3. A sharp probe to feel for cavities and to check for tartar under the gum.

If you have many people to examine, it is helpful to have more than one of each instrument. But be sure they are clean.

Dirty instruments easily can pass infection from one person to another. After you finish an examination, clean your instruments in soap and water and then leave them in a germ-killing solution like the ones described on page 89.



A GOOD DIAGNOSIS

You are making a **diagnosis** when you decide what a person's problem is and what is causing it. To do this, you need information. **You need to make a careful examination to make a good diagnosis.**

> **Learn all you can about the person's problem:**
>
> **1.** Ask questions about the problem.
> **2.** Look at the person's face. Think about the person's age.
> **3.** Examine the mouth more carefully than before.
> **4.** Touch the place that is sore.

1. Ask the person about the problem.

Give a sick person a chance to describe how he is feeling.

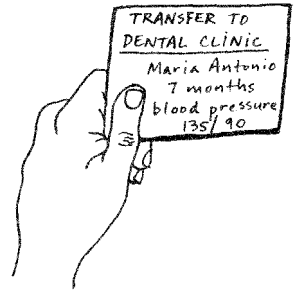
Listen. Think about what possibly is happening in his mouth.

You may have an idea about what the person has. Now try to find out more by asking questions:

- **What is the problem?** Ask him to talk about the pain, swelling, bleeding, or whatever he is feeling.
- **Where does it feel that way?** See if he can put his finger on the tooth or place that is bothering him.
- **When do you have the most pain?** Find out if it happens all the time or only some of the time (for example, when he drinks something very cold).
- **When did it start?** Find out if he has already had this problem before. Ask how he took care of it.
- **Have you had an accident or injury lately?** Infection still inside the bone from an old injury in the mouth can make a sore on his face, or start swelling.
- **Are you having other problems?** A head cold or fever can make the teeth hurt.
- **How old are you?** Think about a new tooth coming into the mouth.

After you hear the answers to your questions, decide if your original idea is the correct diagnosis. If not, try to think of another possibility and ask more questions. This is the **scientific method** of making a diagnosis. For a good explanation of scientific method, see Chapter 17 of *Helping Health Workers Learn.*

When you talk to a woman, find out if she is pregnant. A pregnant woman's gums can easily become infected. The gums may bleed and she may have more tooth decay. But this does not have to happen. If a pregnant woman takes extra care of her teeth and gums, she can prevent most dental problems. But if she already has a problem, do not wait for the baby's birth before you help her. **You can treat a pregnant woman's mouth problems now.** In fact, this may be an important way of protecting her baby as well (see pages 15 to 16).



Train midwives to examine women's mouths. When they send women to you for dental care, they can give you helpful information about the women's health.

Caring for a pregnant woman—a guide for dental workers

1. Ask her how many months she has been pregnant and find out if she has high blood pressure. Any person with blood pressure over 150/100 may bleed excessively after extraction. To get this information, encourage all women to have regular check-ups with a midwife or a trained health worker who has equipment for measuring blood pressure.
2. Do not take X-rays of teeth unless absolutely necessary. X-rays are dangerous to the unborn baby inside. Before an X-ray, always cover the mother's chest, belly, and thighs with an apron lined with lead.
3. Do not give her tetracycline or doxycycline while she is pregnant or breastfeeding.
4. Always give a careful and complete mouth examination. Tell her what treatment she needs and how to prevent tooth problems.
5. Be gentle. Show the woman that you care, that you want her to be comfortable, and that you can treat her without hurting her.

2. Look at the person.

People have some problems more often at certain ages. When a person first comes in to see you, notice his age. Then, before you ask him to open his mouth, look at his face for a sore or swollen area.

SWELLING

CHILD

Swelling can come from:

- mumps
- an infection in the spit gland (p. 119)
- a tooth abscess (p. 93)

YOUNG PERSON

Swelling can come from:

- a new tooth growing in (p. 100)
- a tooth abscess (p. 93)

ADULT

Swelling can come from:

- a tooth abscess (p. 93)
- a broken jaw (p. 113)
- a tumor (p. 125)

A SORE

CHILD

A sore can come from:

- impetigo
- Vincent's infection (p. 102)

YOUNG PERSON

A sore can come from:

- fever blisters (p. 104)
- a tooth abscess (p. 93)

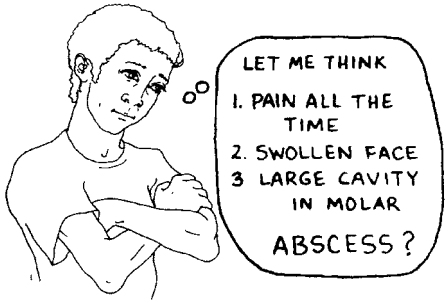
ADULT

A sore can come from:

- a tooth abscess (p. 93)
- a bone infection (osteomyelitis)

3. Examine inside the mouth.

Remember what the person said, the person's age, and what you saw. Now look more closely at the problem area.



Look at the teeth:

- Is a new one growing in?
- Is a tooth loose?
- Is there a dark (dead) tooth?

Look at the gums:

- Are they red?
- Is there any swelling?
- Do they bleed?
- Are the gums eaten away between the teeth?

Look also for sores on the inside of the cheek or lips, and on the tongue.

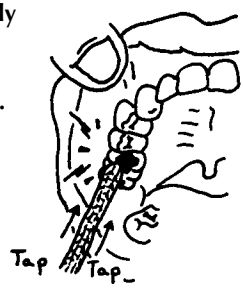
4. Touch the sore place.

Touching is a good way to find out how serious the problem is. This will help you decide which treatment to give.

Push gently against each tooth in the area of pain to see if a tooth is loose. Rock the loose tooth backward and forward between your fingers, to see if it hurts when you move it.

Using the end of your mirror, tap against several teeth, including the one you suspect.

There is probably an abscess on a tooth that hurts when you tap it.



Press against the gums with cotton gauze. Wait a moment, and then look closely to see if they start bleeding. Then use your probe gently to feel under the gum for tartar. Carefully scrape some away. Wait and look again to see if the gums bleed. **When gums bleed, it is a sign of gum disease.**

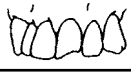
LEARN TO TELL SIMILAR PROBLEMS APART

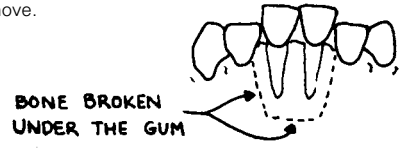
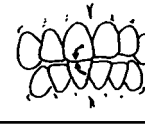
If a person comes to you with a toothache or a sore or a loose tooth, there are many possible causes for each problem. The first thing you notice—the toothache, sore or loose tooth—is your first step to a diagnosis. To this you must add more information before you can point to the most probable cause.

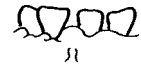
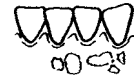
Put together what you have found with what you already know about teeth and gums. You can make a good diagnosis of a problem without knowing a special name for it.

Usually it is easy to make a diagnosis. However, sometimes you will not be sure, and these are the times to seek the advice of a more experienced dental worker. **Never pretend to know something you do not. Only treat problems that you are sure about and have supplies to treat properly.** See *Where There Is No Doctor,* p. w4.

Use the charts beginning here to help you make the diagnosis. For more practice using charts to tell problems apart, see Chapter 21 of *Helping Health Workers Learn.*

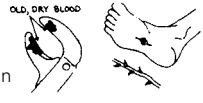
IF THE PERSON HAS	AND YOU FIND OUT THAT		HE/SHE MAY HAVE	SEE PAGE
A TOOTHACHE	It hurts only after eating or drinking. There is a cavity, but the tooth does not hurt when you tap it.		a cavity	92
	Part of the filling has fallen out, or is cracked and ready to fall out. Eating and drinking make the tooth hurt.		a cavity under an old filling	92
	The tooth hurts when chewing food. It may hurt when tapped, but there is no cavity and the tooth looks healthy.		tartar between the teeth	131
	It hurts all the time—even when person tries to sleep. The tooth hurts when you tap it and it feels a bit loose.		an abscess	93
	It hurts when person breathes in cold air. The tooth was hit recently.		a cracked or broken tooth	96
	He cannot open his mouth properly. Steady pain and a bad taste are coming, from the back of the mouth.		a new tooth growing in	100
	Several top teeth hurt, even when you tap them. She had a head cold and can only breathe through her mouth.		an infected sinus	95

IF THE PERSON HAS	AND YOU FIND OUT THAT		HE/SHE MAY HAVE	SEE PAGE
A SWOLLEN FACE	He had a toothache recently. The bad tooth hurts when you tap it.		a tooth abscess	93
	She is young, about 18 years old, and has trouble opening her mouth.		a new tooth growing in	100
	He was hit on the face or jaw. The bone hurts when you touch it. The teeth do not fit together properly.		a broken bone	108
	The swelling is under or behind the jaw. It gets worse when he is hungry and smells food.		an infection inside the spit gland	119
	The swelling has been there for a long time. It does not seem to get better.		a tumor	125
A LOOSE TOOTH	Food and tartar are attached to the tooth. The gums around it are loose and swollen.		infection inside the root fibers—from gum disease	101
	There was pain in the tooth before, but it does not hurt so much anymore. It has a cavity and there may be a sore on the gums near it.		infection in the bone—from an old tooth abscess	99 and 93
	The tooth was hit some time ago.		a root broken under the gum	96
	When the loose tooth moves, the bone around it and the tooth beside it also move. 		a broken bone around the tooth's roots OR infection inside the bone from Vincent's Infection	108 to 112 102 and 121
	When you ask the person to slowly close his teeth, one tooth hits another, before the other teeth come together.		a tooth is out of position and biting too hard aganist another	99

IF THE PERSON HAS	AND YOU FIND OUT THAT		HE/SHE MAY HAVE	SEE PAGE
A SORE MOUTH from INFECTED GUMS	The gums are red and swollen. They bleed when the teeth are cleaned.		gum disease starting	101
	Between two teeth the gums are sore and swollen, like a small tumor.		something caught under the gum	133
	The gums between the teeth have died and are no longer pointed. Pus and blood around the teeth make the mouth smell bad.		Vincent's Infection (a more serous gum infection)	102
	The gums are bright red and sore, but between the teeth they are still pointed.		fever blisters on the gums—from Herpes Virus	104
or A SORE MOUTH from a SMALL SORE in another place	A sore on the inside of the cheek, lips, or under the tongue, is yellow with the skin around it bright red. Food touching it makes the sore hurt more.		a canker sore	106
	A sore spot around or under a denture hurts when you touch it.		a sharp place on a denture, or an old denture that needs to be refitted	106
	A kind of white cloth seems to be stuck to the top of the mouth or tongue. It may stop a baby from sucking.		thrush	105
	The sore is near the root of a bad tooth.		gum bubble	74 and 93
	The corners of the mouth are dry. The lips crack and are sore.		malnutrition	107
	Small painful blisters on the lips soon break and form dry scabs.		fever blisters—from Herpes Virus	104

A SORE THAT DOES NOT HEAL PROPERLY MAY BE CANCER (See page 125).

IF THE PERSON HAS	AND YOU FIND OUT THAT		HE/SHE MAY HAVE	SEE PAGE
A SORE ON THE FACE	Inside his mouth, he has a tooth abscess or a broken tooth near the sore.		abscessed tooth draining pus to the outside of the face	120
	A dark sore is eating through the cheek. Her gums are badly infected. A bad smell is coming from the dying skin on the face, and from inside the mouth.		a condition called *Noma*—starting from Vincent's Infection of the gums	121
	A 1-month-old sore on the lips is not healing with medicine.		cancer	125

TROUBLE OPENING THE MOUTH	He is young, between 16–24 years, with some swelling behind his jaw.		a new tooth growing in	100
	He recently had an accident.		a broken jaw—probably in front of the ear	108
	He had a toothache before in a back tooth with some swelling.		an abscess in a back tooth	93
	When she tries to open her mouth, there is clicking sound from in front of her ear. It also hurts in that place whenever she tries to open her mouth or chew food.		pain in the joint—where the jawbone joins the head	114
	Swallowing is difficult and the jaw grows stiff. Germs have gone into the body from dirty instruments or an infected wound.		tetanus	118

TROUBLE CLOSING THE MOUTH	After opening wide to eat or yawn, his mouth became stuck there. He was many missing back teeth.		a dislocated jaw	113
	He had an accident and now something is stopping the teeth from coming together.		a broken jaw	108

CHAPTER 7

Treating Some Common Problems

You must make a good diagnosis to treat a problem so it goes away and does not return. Why treat a sore on the face by cleaning it when the sore is from pus draining from a tooth with an abscess? You need to know the cause of the sore to give the best kind of treatment.

After you make the diagnosis, you must decide whether you or a more experienced dental worker should provide the treatment.

Know your limits. Do only what you know how to do.

In the following pages, we describe the kinds of problems you as a health worker may see, and we also give the treatment for each problem.

Before you touch the inside of anyone's mouth, learn how to keep clean. The next 6 pages explain how you can prevent infections by washing your hands, wearing gloves, and sterilizing your instruments.

Germs in the mouth

The mouth is a natural home for germs. They usually do not cause problems because the body is used to them. In fact, many germs are helpful. For example, when we eat, some germs break down chewed food into parts small enough for the body to use.

There are problems when the number of these ordinary germs increases greatly, or when strange, harmful germs come into a healthy body from outside. Fever and swelling follow. It is an infection.

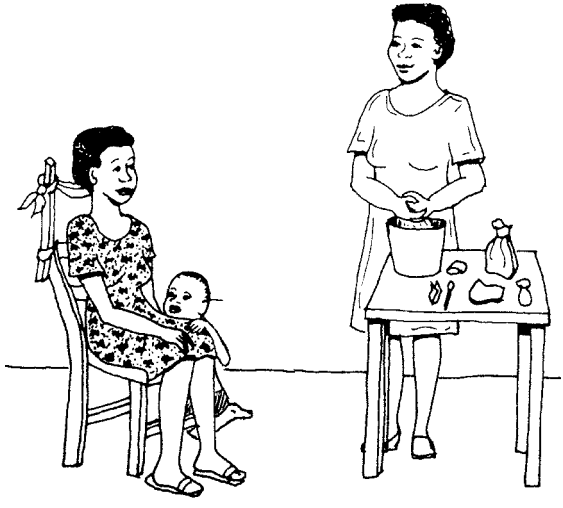
When we regularly clean the mouth, the number of germs stays normal. You can teach others to clean teeth and gums, but cleaning is each person's responsibility.

However, dental workers have one serious responsibility. **You must not spread germs from a sick person to a healthy person.** You must do everything you can to make sure your instruments are clean. An instrument with blood on it can spread hepatitis (a serious liver disease) or HIV, which causes AIDS.

THE FIRST RULE FOR TREATMENT: STAY CLEAN!

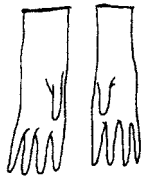
No matter what problem you are treating, be sure that your workplace, your instruments, and you are always clean. For example, **prevent infection by always washing your hands** before you examine or treat someone.

Wash your hands in front of the person, in the same room. You will show that you are a careful and caring health worker. Also, you will demonstrate just how important cleanliness really is.

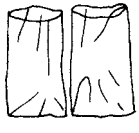


Wear gloves

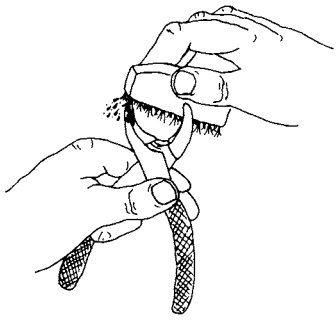
Latex or plastic gloves protect the people you touch from germs that may be stuck under your fingernails or on your skin, even after you wash your hands. They also protect you from getting infections. Wear clean gloves whenever you touch someone's mouth or any blood.



If you are filling or removing a tooth, or if you are touching any instruments that have been sterilized, you must wear sterile gloves.



If you do not have gloves, use plastic bags that have been washed in disinfectant soap instead. Bags are harder to use than gloves, but they are better than nothing.



Germs hide inside bits of old food, cement, or blood on an instrument. There they can continue to live, even in boiling water.

This is why you must be sure to scrub the working end of each instrument carefully with soap and water. Rinse, and then look carefully to see that it is clean and shiny.

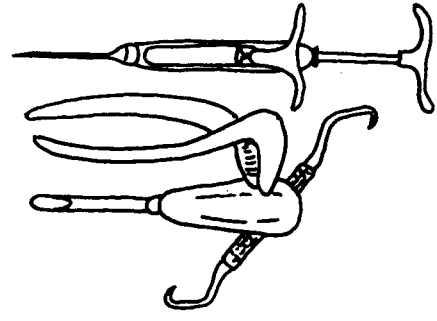
Remember that 'clean looking' is not necessarily 'clean'. Truly 'clean' means free of germs. Unless you ***sterilize,*** that instrument may still have germs, the kind that cause infection in the next person that it touches.

Sterilizing means killing germs. The best way to sterilize is with heat. High heat kills almost all harmful germs—especially those that cause hepatitis, tetanus, and mouth infections. Wet heat (steam) is always more effective than dry heat from an oven.

Here is a simple rule to use in deciding when to sterilize:

Boil or sterilize with steam any instrument that has touched blood.

That means always sterilize all syringes, needles, and instruments you use when scaling teeth (Chapter 8) or when taking out a tooth (Chapter 11).



Be safe: When in doubt, sterilize.

Instruments left in boiling water need 30 minutes to become sterile. A pot with a cover to trap the steam can act faster. The inside becomes hotter and 20 minutes is enough. But remember that water can rust metal instruments. To prevent rust:

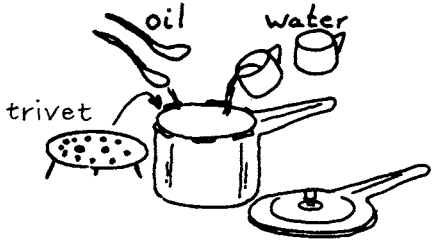
- Add 5 spoonfuls (20 ml) of oil to every liter of water you boil.
- Then lay the hot instruments on a dry, clean (sterile, if possible) cloth, so the water can evaporate.

Never put an instrument away while it is wet.

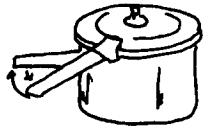
Sterilizing with steam under pressure is the fastest and surest method. It kills harmful germs in 15 minutes. You need a strong pot with a tight fitting lid. **But be sure to make a small hole in the lid so steam can escape when the pressure becomes too great.**

A special pot called a pressure cooker is perfect for this. It even has a safety hole on it to release extra steam.

1. Put 2 cups of water and 2 spoonfuls of cooking oil into the pot.



2. Place the handles together. Put on high heat until a loud hissing noise begins.



3. Put on lower heat. Begin timing **now.** Leave the hissing pot on the low flame for 15 minutes.

DO NOT LET THE COOKER BOIL DRY!

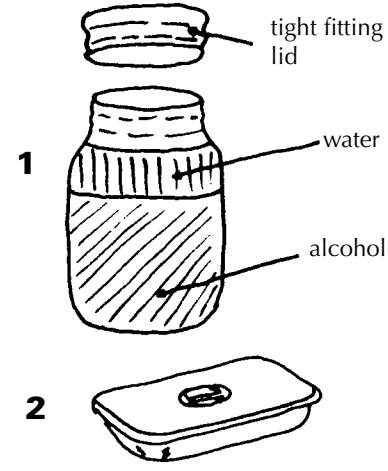
4. Cool the pot under water, open, and lay the instruments on a clean towel to dry.

The next time you use the pot, you can use the same water that was left inside it.

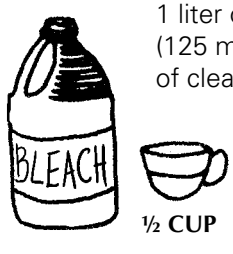
Sterilizing with heat is not necessary for instruments that do not touch blood. For example, after you examine a person or place a temporary filling, you can clean your instruments and then soak them in a solution of alcohol or bleach.

Alcohol solution

1. Mix in a large container each week: 7 parts alcohol (95%) with 3 parts clean water. Keep the container tightly covered to prevent evaporation.
2. Keep a covered pan half filled with this mixture. You will have to add some more of the mixture from the large container to the pan each day.
3. Leave your clean instruments in the pan, completely covered with the liquid, for 30 minutes.

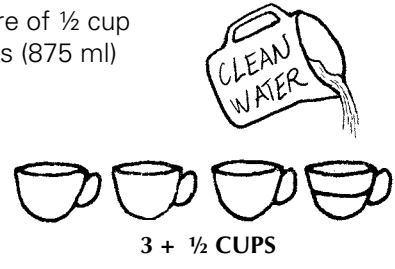


Bleach solution (sodium hypocholorite)
Find the cheapest brand name in your area for bleach. Examples are ***Javex, Clorox, Purex,*** and ***Cidex.*** Make 1 liter of solution with a mixture of ½ cup (125 ml) of bleach and 3½ cups (875 ml) of clean water.



½ CUP

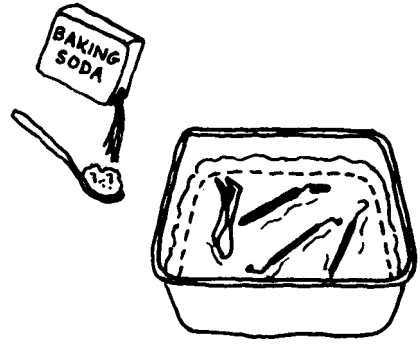
BLEACH & WATER



3 + ½ CUPS

Unfortunately, bleach rusts metal instruments. To reduce rust, add 1 large spoonful of baking soda (sodium bicarbonate) to the solution, and leave your instruments in the solution for only 30 minutes.

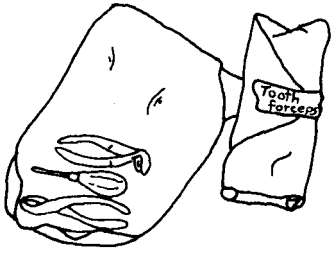
Wipe each instrument with alcohol to remove the film of bleach. Then store it dry inside a clean cloth or in another covered pan.



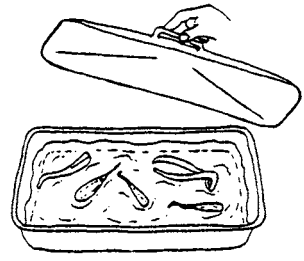
Change the solution each week.

Keep your sterile instruments together in a clean place.

Wrap them in a clean cloth **OR** Leave them in disinfectant (p. 89)

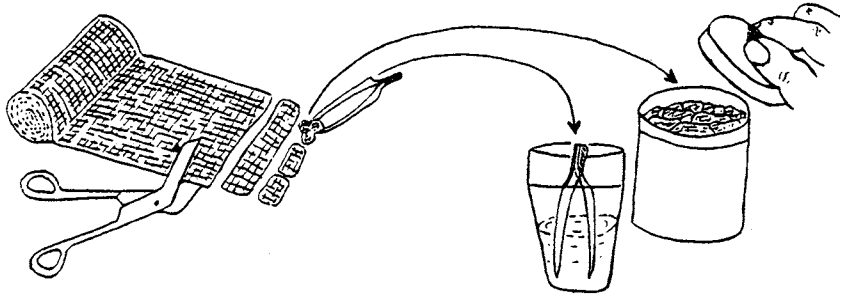


Mark with tape the names of the instruments inside.



Before you use any instrument again, wash it with clean water—to remove the taste of the disinfectant.

Germs living in dirty cotton can easily go inside the socket and start an infection. It is important, therefore, to keep the cut pieces in a container that is clean and has a cover. Use clean tweezers to remove the cotton gauze when you need some.



Also, keep your room and work area clean. Sweep or mop the floor one or two times a day, and wipe down the chair and tables after every patient.

Staying clean is a part of staying healthy.

NEEDLES

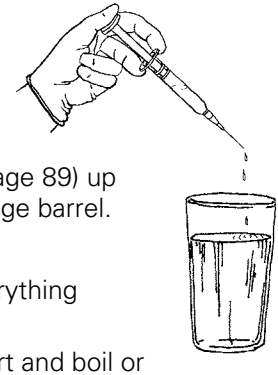
Many people get sick with serious illnesses like hepatitis or HIV from using unsterilized needles.

Reusable syringes and disposable syringes

Reusable syringes can be used again and again. Reusable syringes make less waste and can save money, but they must be washed very carefully and sterilized after every use.

Use each disposable needle only one time and then throw it away in a box like the one on pages 199–200. If you must reuse a needle, replace the cap very carefully and put the needle in a safe place (such as a pan full of bleach solution) until you are ready to clean and sterilize it (p. 138).

HOW TO WASH AND STERILIZE A SYRINGE AND NEEDLE FOR REUSE:



1. Put on a pair of heavy gloves to protect your hands from germs and from sticking yourself with the needle.
2. Draw 5% bleach solution (see page 89) up through the needle into the syringe barrel.
3. Squirt out the bleach solution.
4. Repeat several times. Rinse everything several times with clean water.
5. Take the syringe and needle apart and boil or steam them. (See page 138.)

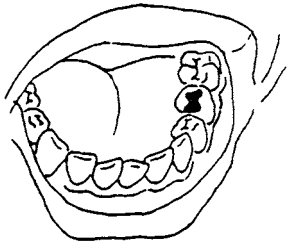
Never reuse a needle or syringe without cleaning and sterilizing it first.

PART 1
PROBLEMS YOU WILL SEE MOST OFTEN

CAVITIES AND LOST OR BROKEN FILLINGS

A cavity can occur in any tooth. A cavity can also start around an old filling, especially if it is dirty. The deeper a cavity gets inside the tooth where the nerve lives, the more the tooth hurts.

SIGNS:



- Pain when drinking water or eating something sweet.
- A hole (or black spot) on the tooth, or between two teeth.
- Pain if food gets caught inside the hole.
- No pain when you tap the tooth.

TREATMENT (when there is no abscess):

Try to remove any loose piece of filling with a probe. Then, following the steps in Chapter 10, put in a temporary filling.

Now:

1. Fill the hole with cement. If you have no cement, put some cotton into the hole to keep food out.
2. Look for cavities or broken fillings in the other teeth. Fill each one with cement before it gets worse and starts to hurt.

Soon (within a few months):

3. Arrange for someone to replace the temporary filling with a permanent one. You will need a person who has experience using a dental drill (see page 151), or doing Atraumatic Restorative Treatment (ART), a way to remove cavities without drilling..

A groove on the neck of a tooth is a more difficult cavity to fill. For the temporary cement to hold properly, you need to shape the groove with a drill. To help temporarily, you can put a little fluoride toothpaste on the groove (page 205). Do this once each week until the inside part of the groove is stronger and the tooth hurts less. Or, you can paint the inside of the groove with oil of cloves (eugenol) to reduce the pain.

To avoid making the problem worse, **(1)** do not use a hard toothbrush; **(2)** do not brush back and forth along the gums; and **(3)** do not chew tobacco or betel nut and do not hold them against the teeth.

TOOTH ABSCESS

A cavity that is not filled grows bigger and deeper until it touches the nerve. Germs travel inside the tooth's root and start an infection called an **abscess.**

Pus forms at the end of the root, inside the bone. As the pus increases, it causes great pressure. This is why an abscess causes severe pain.

SIGNS:

- Pain all the time, even when trying to sleep.
- Tooth often feels longer, and even a bit loose.
- Tooth hurts when it is tapped.
- A sore on the gums near where the root ends *(gum bubble).*
- Swelling of the gums around the tooth, or swelling of the face on the same side as the bad tooth.

TREATMENT:

If there is no swelling, take out the tooth immediately (unless you are able to give root canal treatment). This allows the pus to escape and relieves the pain. See Chapter 11.

If there is swelling, treat the swelling first. Take out the tooth only after the swelling goes down. This is necessary because an anesthetic (see Chapter 9) will not work if there is swelling.

To treat the swelling, give an antibiotic. **Penicillin by mouth is best.** Use an injection only when the person is in immediate danger. For example, inject penicillin when the person has a fever or if the swelling is pressing against the throat. But remember you can treat most serious infections with simple penicillin by mouth. For the doses for serious infections, look below the box on the next page. **If you still think an injection is necessary,** look at the section on 'aqueous procaine penicillin' on page 204.

Adults and children over 25 kg (60 pounds) of weight should take the same amount of oral penicillin. Children under 25 kg should take ½ as much. For most infections, penicillin by mouth is taken 4 times a day for 5 to 7 days. The first dose is double and then the regular dose is taken every 6 hours. **The person should take all of the penicillin, even if the pain or swelling goes down.** For the correct doses, see the next page.

THE BEST CHOICE	SECOND CHOICE (for those allergic to penicillin)
Penicillin: 1 tablet = 250 mg **Give enough tablets for 5 to 7 days**	Erythromycin: 1 tablet (or capsule) = 250 mg **Give enough tablets for 5 days**
First Dose (take all at once)	**First Dose** (take all at once)
Adults and children over 25 kg: 4 tablets (1000 mg) Children under 25 kg: 2 tablets (500 mg)	Adults and children over 25 kg: 4 tablets (1000 mg) Children under 25 kg: 2 tablets (500 mg)
Then every 6 hours for 5 to 7 days	**Then every 6 hours for 5 days**
Adults and children over 25 kg: 2 tablets (500 mg) Children under 25 kg: 1 tablet (250 mg)	Adults and children over 25 kg: 2 tablets (500 mg) Children under 25 kg: 1 tablet (250 mg)
IMPORTANT: to allow it to best fight infection, take penicillin **before** eating.	**IMPORTANT:** to avoid upset stomach, take erythromycin **with** meals.

Note: If you do not have penicillin, use amoxicillin, 3 times a day for 7 days. Adults and children over 25 kg take 500 mg each dose, and children under 25 kg take 250 mg each dose. To use ampicillin, see *Where There Is No Doctor.* People allergic to penicillin will also be allergic to amoxicillin and ampicillin.

For many infections, taking penicillin for 5 days should be enough. **For serious infections,** it may be necessary to take the antibiotics for 7 days. For however long you take them, always take the double dose the first time, and then the regular dose 4 times a day (every 6 hours). If the infection does not heal, you may need a different medicine. Usually you can take out the tooth 1 or 2 days before the end of the antibiotic treatment, but **the person must continue to take all of the tablets, even after you have taken out the tooth.** If not, the infection might come back even stronger than before.

If the swelling is 'pointing', open it with a sharp sterile knife to release the pus. Cover the wound with a sterile dressing to keep it clean. If you are not able to do that, explain how to reduce the swelling with **heat.** As often as possible until the swelling goes away:

- soak a cloth in warm water and hold it against the face.
- hold warm water inside the mouth near the swelling. It is not necessary to add salt to the water.

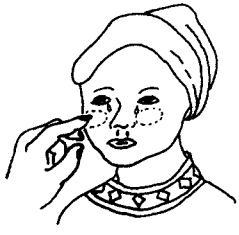
Finally, give the person medicine for pain. A 2-day supply will be enough, because the penicillin and the heat will reduce the pressure and that will reduce the pain. The best medicines for pain are **aspirin,** which comes in 300 mg tablets, and **acetaminophen** (paracetamol), which comes in 500 mg tablets. Aspirin is usually cheaper, but acetaminophen does not cause stomach pain and it is safer than aspirin for children. (To avoid stomach pain, take aspirin with food, milk, or water.) See doses at the top of the next page.

EVERY 6 HOURS (4 times a day):		**aspirin**	*or*	**acetominophen**
adults		600 mg		1000 mg
children	8 to 12 years	300 mg		500 mg
	3 to 7 years	150 mg		250 mg
	1 to 2 years	do not use		125 mg

INFECTED SINUS

A sinus is a hollow place inside the bone. There is a sinus under the eyes, on each side of the nose. Because the sinus is very close to the roots of the top teeth, these teeth may hurt if the sinus becomes infected.

SIGNS:



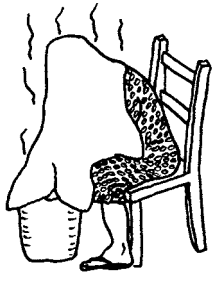
- Toothache in several top teeth. The teeth look healthy, but hurt when you tap them.
- A head cold, and plugged nose. She can only breathe through her mouth.
- Hurts when you press against the bone under her eyes.
- Tooth feels different when patient bends over forward.

TREATMENT:

Do not take out any teeth. They will feel better after you treat the sinus infection.

1. Give penicillin for 5 days (page 94).

2. Explain to the person that she should:



- drink lots of water.
- breathe steam from boiling water to clear her nose.
- hold a warm wet cloth against her face, as often as possible.
- not try to blow her nose, or else her ears will hurt. Wiping the nose is better.

3. See the person again after 3 days, and

- examine her teeth closely, tapping them to be sure they are strong and healthy.
- if she is not better, get help from a more experienced health worker.

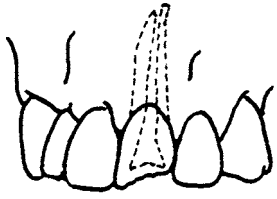
TOOTH INJURIES

1. Broken tooth

It is possible to save a broken tooth. It depends on where the tooth is broken and whether its nerve is still covered.

SIGNS:

- Pain when breathing air or drinking water.
- Blood from the gums around the tooth.
- Tooth moves when you touch it.



TREATMENT:

Take out the broken tooth if:

- its nerve is not covered. If no one can give special root canal treatment, the tooth must come out. Germs from the saliva have already gone inside the tooth and started a small infection.
- its root is broken. To see if it is broken, push gently against the tooth as you feel the bone around its roots. **The tooth's root probably is broken** if the tooth moves but the bone does not. **The root probably is not broken** if both the tooth and bone move. However, the bone around the roots may be broken (page 109).

You can save a broken tooth if the nerve is still covered and the root is not broken. To do this, use a file on the sharp edges around the break. This makes them smooth so they do not cut the tongue. Later, an experienced dental worker who has the equipment can cover the broken part with a cap or a filling. Until this is possible, tell the person how to protect the tooth:

- Give the tooth a rest. Use other teeth to eat.
- Do not drink things that are very hot or cold, and do not eat spicy food.
- Watch the tooth. See if it changes color (gets darker). Also watch the gums near the root. See if a sore (gum bubble) develops.

A dark tooth and gum bubble are signs that the tooth is dying. Take it out, unless you can give special nerve treatment.

2. Tooth knocked out

When a tooth is knocked out of the mouth, you should ask two questions:

(1) Was it a baby tooth? **(2)** How long ago did it happen?

Baby tooth. There is no reason to try to put a baby tooth back into the socket. Tell the child to bite on some cotton to stop the bleeding. Then wait for the permanent tooth to replace it. **Warn the mother that the permanent tooth may take more time than usual to grow into the mouth.**

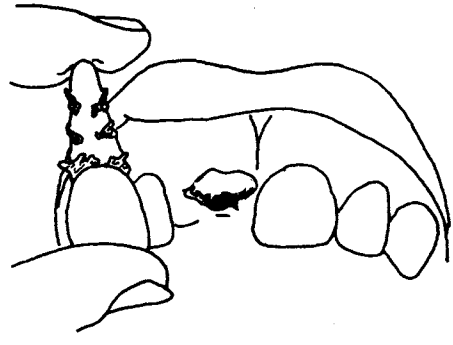
Similarly, there is no need for treatment if the baby tooth is pushed up under the gum.

The tooth may grow back into the right place later, or it may turn dark and die. if you see a darkened tooth or a gum bubble (page 74), take out the baby tooth before it hurts the permanent tooth that is growing under it.

Permanent tooth. A permanent tooth is worth saving. How long ago was it knocked out? If it was less than 12 hours ago, you can put a permanent tooth back into the socket. The sooner you do this the better, so do not wait. **If you replace the tooth in the first hour, it has a much better chance of joining with the gum and bone.** In order to heal and to join the bone, the tooth must be held firmly.

a) Wash the tooth gently with saline, milk, or clean water. There should not be any bits of dirt on the root of the tooth.

Keep the tooth damp with wet cotton gauze.



Do not scrape away any skin from the root or from the inside of the socket.

b) If you can not use anesthetic, tell the patient that it will hurt somewhat. Gently push the tooth up into the socket. As you push it up, use a slight turning movement back and forth.

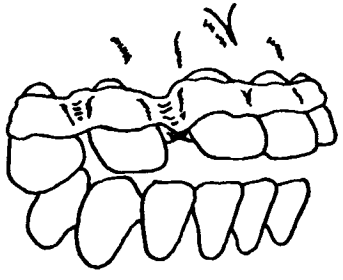
The biting edge of the loose tooth should be at the same level as the teeth beside it.

Hold it in place with your fingers for about 5 minutes.

c) Soften some beeswax and form it into 2 thin rolls. Place 1 roll near the gums on the front side of 5 teeth: the loose tooth and the 2 teeth on each side of it. Press the wax firmly, but carefully, against these teeth.

Do the same with the second roll of wax on the back side of the same teeth, again near the gums.

It is good if the wax on the back side is touching the wax on the front side. This helps the wax hold the teeth more firmly. To do this, you can push the wax between the teeth with the end of your cotton tweezers.



Keep the wax in its position for at least 3 weeks.

Tell the person with the injured tooth to return to see you several times. The tooth may die several months or even several years later (see page 47). If that happens, you must take out the tooth, unless you can do root canal treatment.

If it is possible, take an X-ray of the tooth 6 months later and then again each year. Look at the X-ray picture of the root to be sure an infection is not eating it away. To do this, compare the root with the roots of the teeth beside it.

LOOSE TOOTH

A tooth may be loose for one of several reasons. Decide the reason before giving the treatment.

IF THE TOOTH IS LOOSE BECAUSE	THE BEST TREATMENT
a new permanent tooth is growing under it.	1. tell the mother and child what is happening. 2. pull out the loose baby tooth, if it is hurting the child.
gum disease or an old abscess has eaten the bone around its roots.	1. take out the tooth, especially if it also hurts. 2. explain to the person what to do to prevent this problem in other teeth. (See Chapter 5.)
its root has been broken.	take out both parts of the tooth. If you have trouble taking out the broken root, leave it and try again a week later.
the bone around its root is cracked. (The bone moves when you push against the tooth.)	**Do not take out the tooth.** If you do, the bone will come out with it. Instead, hold the tooth with wires (page 110).

A tooth may also be loose because another tooth is biting too hard against it.

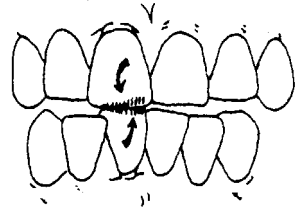
SIGNS:

- You can feel the tooth move when the upper and lower teeth meet.
- That tooth hurts.

TREATMENT:

You need to remove a bit of each of the teeth that are biting too hard. Use either a dental worker's drill, a small file, or a hard stone.

1. Smooth the **inside** edge of the **upper** tooth.
2. Smooth the **outside** edge of the **lower** tooth.

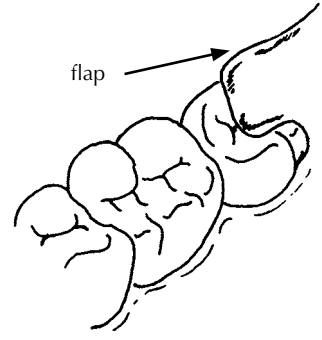


NEW TOOTH GROWING IN

A new tooth cuts through the gums when it grows into the mouth. Germs can easily go under the gums in that place and cause an infection. When the opposite tooth bites against the sore gum it can make an infection worse.

SIGNS:

- Toothache at the back of the jaw.
- Mouth cannot open properly.
- A bad taste coming from the back of the mouth.
- Sore throat.
- Skin over the new tooth is sore and hurts when you touch it.
- The age of the person is the right age for growing a new molar tooth (page 66).



Infection in the gums and pressure from the new tooth are painful. Notice the 'flap' of skin over the new tooth.

TREATMENT:

Do not take out a new tooth while there is still infection and pain. Wait for the infection to finish. Then decide if there is room for the tooth to grow in. A dental X-ray can help you make that decision. New molar teeth are often difficult to take out. Ask an experienced dental worker to take out the tooth, if it must be done.

What you can do

First, treat the infection. Then wait for the new tooth to grow more into the mouth. Tell the person what is happening. Tell him what he can do to keep the gums healthy while the tooth grows in:

- Rinse the area with warm salt water (page 7). Make 4 cups each day until the mouth opens normally again. Then make 1 cup each day to prevent the problem from returning. Keep rinsing this way until the tooth grows all the way in.
- Hold a warm wet cloth against the jaw as often as possible each day.
- Take aspirin for pain (page 94).

Give penicillin (pages 93–94) if there is fever, a swelling, or if he is only able to open his mouth a little.

TEETHING

When babies and small children first get their teeth, it is called **teething.** This can make the child unhappy, because his gums are sore.

Teething does not cause fever, head colds, or cough.

But a child can have any of these problems at the same time as he gets a new tooth.

TREATMENT:

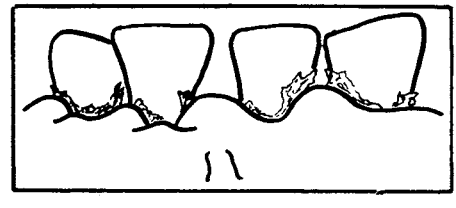
If the child has another sickness, do not blame it on teething. Look for another cause and treat it separately. Also, **do not cut the gum** over the new tooth. Let the tooth grow through the gum by itself.

1. Give acetaminophen for pain and fever (page 94).
2. Give the child something hard to bite against. This will help the tooth to grow through the gums faster. For example, let him chew on a dry hard biscuit.

GUM DISEASE STARTING

Infection can start in the gums whenever the teeth near them are not clean. For example, there may be swelling between only 2 teeth or between many teeth. In addition, gums that are weak from poor nutrition are not able to resist the infection. This is why pregnant women and people living with HIV must take special care to eat well and clean their teeth carefully. When a person has HIV, his body cannot fight infections well, so a gum infection can quickly get worse (page 183).

SIGNS:



Feel for tartar under the gum—or even a piece of fishbone.

- Gums are red instead of pink.
- Gums are loose instead of tight against the tooth.
- Between the teeth, gums are round instead of pointed.
- Gums bleed when the person brushes or flosses.
- Gums bleed when you press against them, or when you scrape away food from under them.
- The person has bad breath and a bad taste inside the mouth.

TREATMENT:

Explain to the person the cause of her gum problem and what she can do to help herself. The only way to stop gum disease is to remove plaque and tartar from the teeth and then to keep them clean.

1. Show her how to clean her teeth better near the gums (page 69).
2. Tell her to rinse her mouth with warm salt water (page 7). Make 4 cups each day until the bleeding stops. Then make 1 cup each day to keep the gums strong and tough.
3. Tell her to eat fresh fruits and vegetables. Guavas, oranges, pineapples, papayas, tomatoes, peas, and green leaves give strength to gums.
4. Gently reach under the gums and remove tartar (or loose piece of fishbone) that is caught there (see Chapter 8).

Sometimes a pregnant woman's gums become swollen, and the swelling does not go down even after cleaning with a soft brush and rinsing with salt water. These swellings must be cut away. But she should wait to have this small operation until after the baby is born.

MORE SERIOUS GUM DISEASE

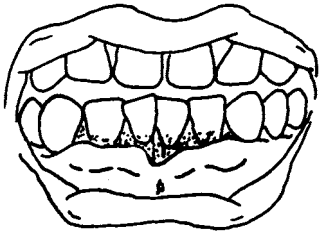
Vincent's infection of the gums, also called ***trench mouth,*** affects both adults and children. In its worst form, it can eat a hole through the cheek of a weak child (page 121).

A person with Vincent's Infection may not want to eat because his teeth hurt when he chews food. That can make a child's malnutrition worse.

You must prevent this problem from starting, especially in a child who is weak from sickness. Teach mothers to clean their children's teeth and to get their children to rinse their mouths with warm salt water.

SIGNS:

- Gums between the teeth are dying and turning gray.
- Pus and old blood collect around the teeth.
- Burning pain from the gums.
- Bleeding from the gums.
- The mouth smells bad.



TREATMENT:

You will need to see the person over a 2-week period. Start some treatment **now:**

1. If the person is already sick, give penicillin for 7 days (page 94).

2. Clean away the pus, old food, and big pieces of tartar. Then:

- Tell the person to rinse his mouth with warm water.
- Wipe his gums with cotton soaked in a 3% solution of hydrogen peroxide, iodine, disinfectant mouth wash, or warm salt water. Rinse with warm water. For a child, use a weaker solution, such as 1 part hydrogen peroxide mixed with 5 parts water.
- Scrape away the bigger pieces of tartar. Do not try to remove all of it. You can do that later. Put topical anesthetic on the gums if you have some (first dry the area with cotton so the topical anesthetic will stay longer). Rinse away any loose bits of tartar with warm water.

3. Teach the person how to care for the gums at home:

- Rinse at home for 3 days with a weak solution of hydrogen peroxide, (page 8), iodine, disinfectant mouth wash, or warm salt water. Try to hold the solution in the mouth for several minutes. The longer the solution touches the gums, the better it is for the gums. Rinse once every hour. After 3 days, change to salt water, 4 cups a day.
- Clean the teeth with a **soft** brush. Parents can clean children's teeth. Show them how (page 18), and ask them to do it even if the gums bleed.

For a young child who is not able to rinse, Mother or Father can wipe his gums with the weak solution 4 times a day.

Show parents how to do this. Give them some cotton gauze and hydrogen peroxide, iodine, or disinfectant mouth wash to take home.

4. Cook food that is soft (like pounded yam) and not spicy (no pepper). Eat fresh fruits and vegetables that give strength to the gums (page 102). If you cannot eat well because of pain, take a multi-vitamin, or at least Vitamin C and Zinc.

- Stop smoking and stop chewing betel nut.

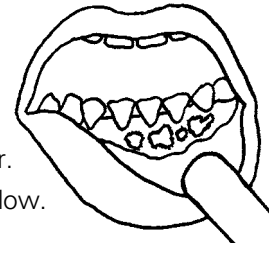
One week later, scrape away the rest of the tartar from the teeth. Then use the person's own brush and show him how to do a better job of cleaning his teeth.

FEVER BLISTERS

Herpes virus is a kind of germ that causes fever blisters. Fever blisters are sores that can form inside the mouth on the gums or outside on the lips. Blisters on the inside cheeks only are not from herpes (see canker sores, page 106).

Sores **inside the mouth** are a serious problem that usually affect children between 1 and 5 years old. A child with fever blisters in his mouth can become very sick. He will not be able to eat properly. If he does not drink enough fluids, he can become dehydrated (lose his body water). This is dangerous! Fever blisters are also a problem for people living with HIV. See pages 186 to 187.

SIGNS:


Inside the mouth

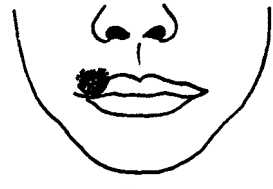
- Sore throat.
- Fever.
- Crying, stops sucking 2-3 days before sores appear.
- Spit spills from the mouth because it hurts to swallow.
- Painful swelling under the jaw.
- Bright red blisters on the gums, **but not between the teeth.** Blisters also may be on the roof of the mouth.

TREATMENT:

Medicine cannot kill the herpes virus. The sores will go away by themselves in about 10 days. The treatment is to help the person feel more comfortable and to be sure he gets enough to eat and drink.

1. Give aspirin or acetaminophen for fever (page 94).
2. Wipe milk or yogurt over the sores to protect them before eating. **Wash your hands before touching the inside of someone's mouth!** (See page 86.) Then give food that is soft and not spicy. If the person cannot eat, prepare a special milk-oil drink, as on page 111.
3. Give lots of fluids to drink.

Sores **on the lips** usually occur after the age of 5. They often appear when the person is weak and sick (for example, with diarrhea or pneumonia.) Usually there is no fever. The blisters soon break open and release water. When they dry, a crust forms. The blisters often return. When sores leak water they can pass infection. If you or anyone else touches them, wash your hands immediately.


On the lips

To prevent the blisters from becoming infected, put an antibacterial cream or petroleum jelly *(Vaseline)* on them. If you hold ice against the sores for several minutes each day, it may help them heal faster. See page 187 for more options.

THRUSH

Thrush is an infection caused by a yeast fungus called Candida. It often appears when a person is weak and poorly nourished, or sick and taking medicine like tetracycline or ampicillin. In a baby, thrush usually appears on the tongue or top of the mouth. It can stop the baby from sucking. In an adult, thrush often occurs under a denture. Thrush is a very common problem for people living with HIV (see pages 180 to 181).

SIGNS:

- White patches on the tongue, cheek, or top of the mouth. Wipe the white area: If there is **no** bleeding it is **old milk.** If there **is** bleeding, it is **thrush.**
- The child may not want to suck or eat.

TREATMENT:

There is usually something else present which is helping thrush to grow. Try to find what it is and deal with it. For example, treat the malnutrition, diabetes, or anemia, change or stop the antibiotic medicine, or clean the denture and leave it out of the mouth for a while. Then:

1. Cover the white patches with nystatin drops. Use a full dropper 4 or 5 times a day until the patches are gone. If you do not have nystatin you can soak a piece of cotton in gentian violet and use it to paint the white patches 2 times a day.

   If the baby's mother has sore, painful nipples, she may also have thrush in her breasts. She should treat her nipples the same way she treats the baby's mouth.

   Do not use penicillin or any other antibiotic unless you need to treat something different. Thrush can get worse when a person uses an antibiotic for a long time.

2. Continue breastfeeding. For older persons, make their food soft and easy to chew.

IMPORTANT: Sometimes white lines appear on the inside of an adult's cheek or on the roof of the mouth. If these lines become sore and do not get better with treatment, they can change into a cancer (page 125). To prevent this cancer, ask the person to **stop smoking** (especially pipes), **stop chewing betel nut, and get dentures adjusted if they do not fit properly.**

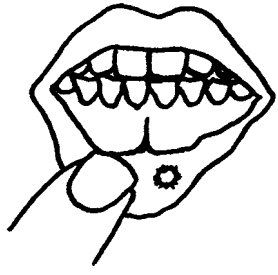
CANKER SORES

The exact cause of canker sores is not known. Canker sores affect both adults and children, and are very common among youth.

One or more sores can appear at any time. These sores hurt, especially when pieces of food touch them.

SIGNS:

- A sore can appear on the cheeks, inside the lips, on the tongue, or below the gums on the smooth skin.
- The sore is white or yellow with the skin around it bright red.
- The person may have had a similar kind of sore before. It tends to come back.



Note: **a sharp edge of a denture rubbing against the gums can make a similar kind of sore.**

TREATMENT:

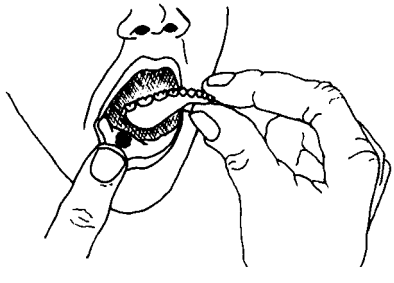
A canker sore goes away by itself in about 10 days. Medicine does not make that happen any faster. (However, smoothing a denture or fixing a broken tooth does help.) The treatment is simple. Tell the person how to feel more comfortable while waiting for the 10 days to pass:

- Eat foods that are soft and not likely to hurt the sore.
- Do not eat spicy food.
- Drink lots of water.
- Chew food on the other side of the mouth, away from the sore.

A denture which does not fit should be remade.

In the meantime, leave the denture out of the mouth for 2 or 3 days.

Ask the person to rinse with warm sait water, 4 cups each day until the sore is better.



If the sore continues after 10 days, it may be infected. Give penicillin (page 93).

A sore that does not heal after antibiotic treatment may be cancer (see page 125)**. See a doctor immediately.**

SORES AT THE CORNERS OF THE MOUTH

Teeth support the lips. When they come together for chewing, the teeth stop the person's chin from moving any closer to the nose.

A person without many teeth looks old. A person with a poor fitting denture also looks old.

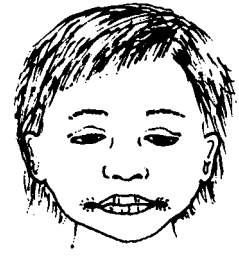
The distance from his chin to his nose is shorter than normal.

He must close his jaw further to eat. That causes lines to form at the corners of his mouth.

Poor health can make lines at the corners of the mouth crack and become sore. These cracks are often infected with thrush and can be treated with nystatin (see page 105). If sores are not at the corners but around the mouth, they could be due to a bacterial infection (see page 94).

A person with missing teeth needs dentures. Dentures will help him chew more food and make him look younger. They support his lips and open his mouth more. (See page 164).

A child who has had a fever or measles often has dry lips. The corners of her mouth can crack and become sore.



Cracks and sores appearing at the corners of a child's mouth are signs of dehydration and malnutrition.

The child needs to eat the kind of foods that give strength, energy, and protection. Feed her beans, milk, eggs, fish, oils, fruits, and green leafy vegetables (see page 67).

TREATMENT (when sores occur):

1. Wash the sores with soap and hot water.
2. Mix 1 part sulfur with 10 parts of petroleum jelly *(Vaseline).*
3. Smear some on the sores 3–4 times a day.

PART 2
SOME SPECIAL PROBLEMS

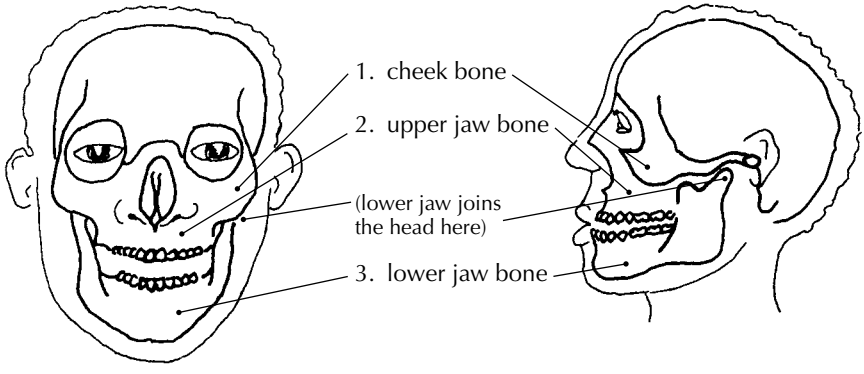
You will find some problems that are too serious for you to treat. If you can, send the sick person to a more experienced dental worker as soon as possible.

Sometimes, however, it is better to start some of the treatment yourself. Early treatment can prevent some problems from becoming more serious. Also, if you know what to do when someone returns from the hospital, you can help that person to get well faster.

Sometimes, you will find it impossible to get help. Therefore, we will discuss each of these more serious problems in detail, so you can give as much help as necessary.

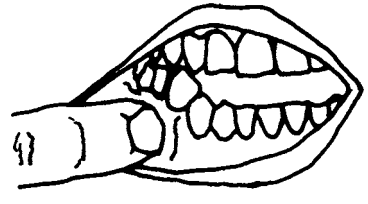
BROKEN BONE

Three main bones form the face and lower jaw.



A bone can break completely, or part of it can crack. In either case, the teeth are usually pushed out of position. Look for this as a sign of a broken bone.

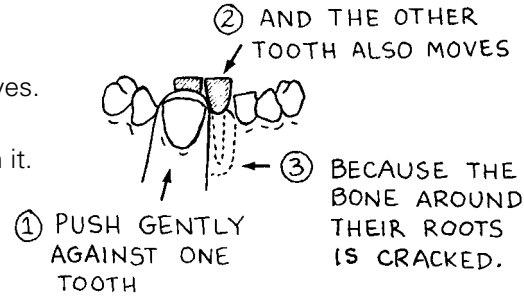
SIGNS of a broken bone:



- The person has had an injury.
- When teeth are closed, some upper teeth do not meet lower teeth.
- The person cannot open or close the mouth properly.
- There is bleeding from between 2 teeth.
- There is swelling or a bruise on the face or jaw.
- There is bleeding into the eye.

SIGNS of a cracked bone around the tooth's roots:

- When you move one tooth, the tooth beside it also moves.
- When you move the loose tooth, the bone moves with it.
- Blood is coming from under the gums.



TREATMENT:

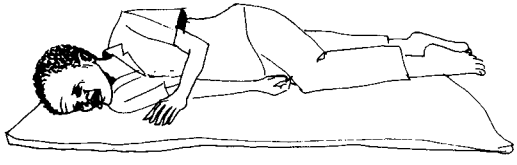
When a bone is broken or cracked, the treatment is to hold the broken parts together so that the parts can rejoin. The usual way to do this is to put wires around the teeth. An experienced dental worker should do this. There are two things you can do. First, provide emergency care. Later, show the person how to eat and how to keep his mouth clean.

Emergency care (pages 109–110):

1. Be sure the person can breathe.
2. Stop the bleeding.
3. Put a bandage on the person's head.
4. Give penicillin to stop infection.
5. Give aspirin or acetominophen for pain.

1. Be sure the person can breathe.

Lie him on his side so that his tongue and jaw fall forward.



Later, carry him to the hospital in that position. If he goes in a car, be sure he sits with his head forward. His jaw and tongue will be forward and he will breathe more easily.

Look inside the mouth to see if any tooth is broken and very loose. A broken piece of tooth can fall out and block the person's airway, so **take out the broken part now.** You can leave in the root, but if you do, tell the dental workers at the hospital (p. 213). They will remove the root when they put on the final wires.

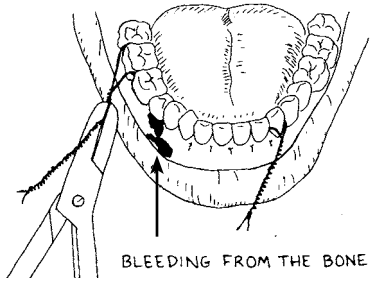
2. Stop the bleeding.

Wipe away the dried blood from his face and from inside his mouth. Look for the place that is bleeding. Sew any deep cuts on his face (see *Where There Is No Doctor,* p. 86). If you gently press cotton gauze against the bleeding gums, it will usually control the bleeding.

Bleeding inside the mouth, from between the broken parts of the bone, is more difficult to stop. You must pull the two sides together and hold them in that position. To do this, you need wire that is thin, strong, and bends easily. 'Ligature wire' (0.20 gauge) is best.

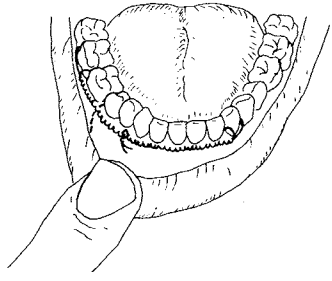
Place a piece of wire around 2 teeth, one on each side of the break. Choose the strongest tooth on each side—the ones with the longest or the most roots.

Tighten the wire around the two strong teeth with pliers or a hemostat.



Ask the person to close his teeth. Lift up the broken part of the jaw and hold it so the lower teeth meet the upper teeth properly. This is the normal way the jawbone holds the teeth.

Now join the wires. Twist and tighten them together. This may be painful. You can inject local anesthetic—see Chapter 8. You must twist the wire tight enough to hold the broken parts together.



Bend the end of the twisted wire toward the teeth. Now it cannot poke the person's lips or cheek.

3. **Put on a head bandage.**

   Gently close the person's jaw so that his teeth come together. Support it in this position with a head-and-chin bandage.

Tie the bandage to support the jaw, not to pull it. Do not make it too tight. It is all right if his mouth stays partly open with the teeth slightly apart.

Be sure not to let the bandage choke the person.

4. **Give penicillin by injection** (page 204) for 5 days to stop infection inside the bone.
5. **Give something for pain.** Aspirin (page 94) may be enough. Give 600 mg by mouth, 4 to 6 times a day, as needed. For children, see doses on page 165. If there is a lot of pain and the person cannot sleep, give codeine. The dose for an adult is 30 mg, 4 to 6 times a day as needed.

Send the person to the hospital as soon as possible. The person must have wires placed on his teeth within a week of the accident. The wires must remain there for 4 to 6 weeks. Every week, the person must return to the hospital to have the wires tightened. During this time he cannot open his mouth to chew food or brush his teeth.

CARING FOR A PERSON WHO CANNOT EAT PROPERLY

1. Give liquid foods for strength and energy.

Prepare food in two ways: **(a)** First, a milk-oil drink to build strength and then **(b)** a special soup to keep him strong and give him energy.

To build strength: Milk-oil drink

Mix for him each day at your clinic:

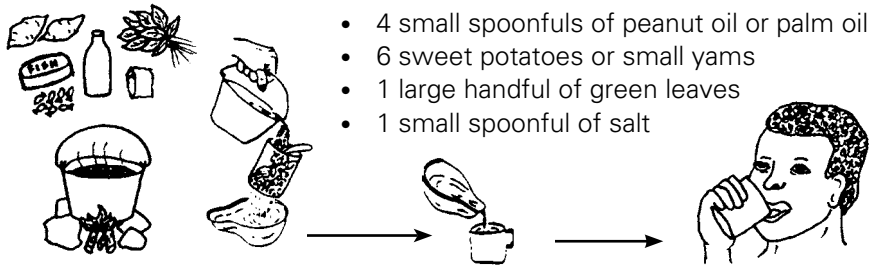
- 9 cups of water
- 3 cups of milk powder
- 150 ml of peanut oil or coconut milk
- ½ cup of honey or 1 cup of sugar

Leave some near his bed, and keep the rest in a cool place.

To keep strength and give energy: Special vegetable soup

Cut into small pieces and cook together in a pot of water:

- ½ tin of fish or a handful of dried fish
- 4 small spoonfuls of peanut oil or palm oil
- 6 sweet potatoes or small yams
- 1 large handful of green leaves
- 1 small spoonful of salt



Pour the soup into an empty tin with small holes made in the bottom. Use the back of a spoon to press as much of the cooked food as you can through the holes. The person can suck the soup between the teeth to the throat and then swallow it. Clean the tin and set it in boiling water, so you can use it again the next day.

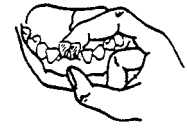
2. Keep the teeth clean and the gums tough.

The person must learn to clean teeth and gums or the gums can quickly become infected and the mouth will feel sore. So:

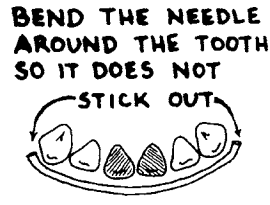
- Scrub both the wires and the teeth with a soft brush after drinking soup.
- Rinse with warm salt water (page 7), 2 cups every day.

LOOSE TEETH

If the bone around the roots of the teeth is cracked, those teeth will be loose. **Do not take the teeth out until the bone is healed.** Otherwise, bone will come out with the teeth and there will be a big hole in the jaw. Instead, support the teeth, in order to hold both sides of the bone steady.



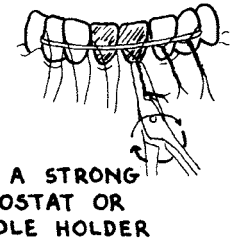
1. With your thumb and finger, gently move the loose teeth and bone back into normal position.
2. Cut a hypodermic needle and use it as a splint. Make it long enough to fit around two strong teeth on each side of the loose teeth. Curve the needle so it fits the curve of the teeth. To make the sharp ends smooth, use a file or rub the ends against a stone.



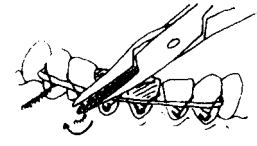
3. Tie each tooth to the needle. Use short pieces of 0.20 gauge ligature wire (page 110).

   Put one end of the wire **under** the needle. Bring it around the back of one tooth and out to the front again **over** the needle.

   Use the end of a small instrument to hold down the wire at the back of the teeth. Then twist the ends together. Tighten the wire around each one of the 6 teeth.



4. Cut the ends of the ligature wire. Turn them toward the teeth, so they will not cut the lip.

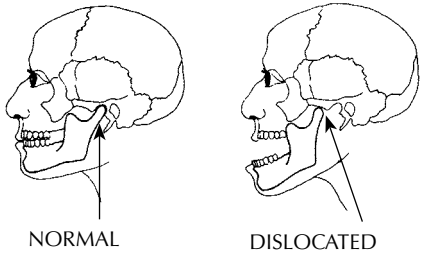


5. Tighten the wires the next day, and then once each week. But be careful. Only ½ a turn usually is needed. More, and the wire will break. Always twist in the direction a clock moves. With this habit, you will remember which way tightens the wire and which way loosens it.
6. Explain to the person that it takes 4 weeks for the bone to heal. The wires must remain on the teeth for this time. To help the teeth to heal, ask the person to:
   - give these teeth a rest. Use other teeth for chewing.
   - clean both the teeth and the wires with a soft brush.
   - rinse with warm salt water, 2 cups every day (page 8).
   - return to have the wires tightened every week.
7. After 4 weeks, cut and remove the wires. Ask the person to watch those teeth. A dark tooth and gum bubble are signs that the tooth is dying. Take it out, unless you can give special nerve treatment.

DISLOCATED JAW

If a person opens her mouth wide and then is unable to close it, we say her jaw is **dislocated.** It is stuck in the open position. This problem often happens to a person who does not have several of her back teeth. When she opens wide to yawn or shout, the part of her jaw that joins her head moves too far forward inside the joint. It is then unable to return to its normal position. You can also dislocate the lower jaw by accident while extracting a tooth.

SIGNS:



- She is unable to close her teeth together.
- She cannot close her lips easily.
- Her lower jaw looks long and pointed.
- It hurts when you press on the joint in front of her ear.
- She cannot speak clearly.

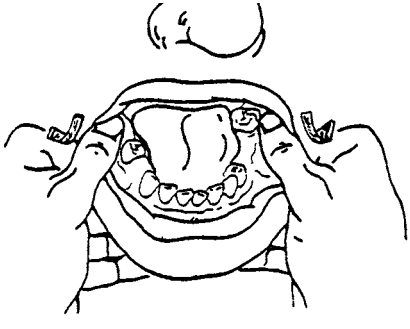
TREATMENT:

The treatment is to try to move the lower jaw back where it belongs. Then hold it in that position until the muscles can relax.

1. Find a way to support the person's head. For example, have the person sit on the floor with her head against a wall.
2. Kneel in front of her. Put your fingers under her jaw, outside the mouth. Put your thumbs beside her last molar tooth on each side. Do not put your thumbs on the molars. The person may bite them!

   Press **down** hard with the ends of your thumbs. Force the jaw to move quickly down and back into position. Be sure to press **down** before you press back.

   If the jaw will not move, perhaps the muscles are too tight. A doctor or dentist can put the person to sleep, which will relax the muscles.



3. Support the jaw with a head–and–chin bandage for 3 to 4 days (page 110).
4. Give aspirin or acetominophen for pain (page 94).
5. Explain the problem to the person and tell her how to care for her jaw: **(a)** eat mostly soft foods for 2 weeks; **(b)** hold a warm wet cloth against the jaw; **(c)** remember not to open the mouth wide anymore. **If possible, replace the missing back teeth with dentures** (page 107)**.**

PAIN IN THE JOINT

A **joint** is the place where one bone joins another. The jawbone has two joints, for it joins the head in front of each ear.

The mouth opens and closes because:

- muscles pull the jawbone; and
- the jawbone slides against the head bone, inside the joints.

Pain in these joints may be because:

(1) The muscles are tight because the the person is tense or nervous.

(2) The jawbone is fractured in the area of the joint. (Also check the lower jaw on the other side since a fracture near the joint is often caused by a blow to the other side of the face.)

(3) The teeth do not fit together properly.

TREATMENT:

Before you treat, decide what is causing the pain. We will discuss the three causes mentioned above.

1. **Tension.**

   Talk with the person and help, if you can, to find a solution to her personal problems. This can do much to help her and her muscles relax. In addition, explain how to care for the sore joint:

   (a) Eat only soft foods until it no longer hurts to chew.

   (b) Hold a hot, wet cloth against the jaw, to help relax the muscle. Do this as often as possible, but be careful not to burn the skin.

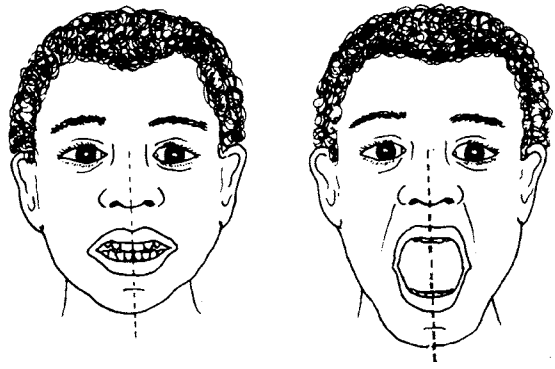
   (c) Take aspirin or acetominophen (page 94) to reduce the pain.

2. **Fracture.**

   If an X-ray shows a fracture, the person needs expert help. A dentist can wire the teeth in a way that will allow the bone to heal.

3. **Teeth do not fit together properly.**

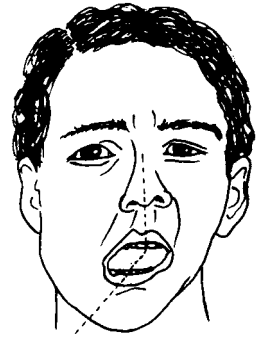
   Imagine a line that passes between the 2 middle upper teeth and the 2 middle lower teeth in the person's closed mouth (see the next page). When the person opens the mouth, this line becomes longer, but it is still a straight line. If it is not, this condition can, after a long time, cause pain in the joint.



These teeth are normal. The line formed between the two middle teeth does not shift when the mouth opens.

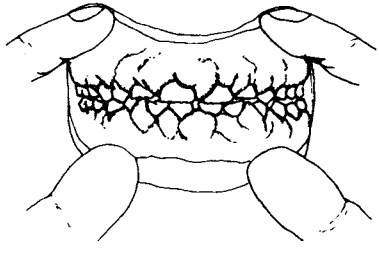
When you see teeth that do not fit properly:

- Warn the person not to open his mouth wide. Suggest, for example, that he take his food in small bites.
- Tell the person what can be done to help. Often a dentist can grind the teeth in a special way and this can end the pain.



These teeth do not fit properly. Because the line shifts, this means the jaw is also shifting. This shift can cause pain in the joint.

SWOLLEN GUMS AND EPILEPSY



Many persons who suffer from **epilepsy** (see *Where There Is No Doctor,* page 178) have a problem with swollen gums. In severe cases, the gums are so swollen that they cover the teeth. This problem is caused not by epilepsy but by diphenylhydantoin *(Dilantin),* a drug used to control epilepsy.

When you see swollen gums, find out what medicines the person is taking. If possible, change to a different drug. If the person must continue using diphenylhydantoin, explain how to prevent this swelling of the gums. Show the person this book, especially pages 69 to 72. Persons who take this drug **may** be able to prevent the swelling by **brushing the teeth carefully after each meal, and taking special care to clean between the teeth** (page 71).

BLOOD IN THE MOUTH

Use wet cotton gauze to wipe away the old blood from inside the mouth. Then you can see where it is coming from. Treat the cause of the bleeding.

IF YOU SEE:	TO STOP THE BLEEDING:	SEE PAGE
a large red clot growing out of a socket where you have taken out a tooth	1. Remove the clot with cotton tweezers. 2. Ask the person to bite on a piece of cotton.	118
sore and bleeding gums and the mouth smells bad (Vincent's infection)	1. Rinse with a mixture of hydrogen peroxide and water. 2. Remove as much tartar as you can.	8 127
a red, bleeding growth inside the cavity in a tooth	Take out the tooth; it has an abscess.	93
a loose tooth with bleeding gums around it	Hold the tooth with wires, or if the root is broken, take out the tooth.	112 157
torn gums with broken bone and bleeding	1. With wire, hold the broken parts of the bone together. 2. Send the person to an experienced dental worker.	110

PROBLEMS AFTER YOU TAKE OUT A TOOTH

Problems such as swelling, severe pain, and bleeding can occur after you take out a tooth. Tetanus (page 118), a more serious problem, can also occur, especially if your instruments were not clean.

Swelling of the Face

You can expect some swelling after you take out a tooth. But if the swelling continues to grow, and it is painful, this is not normal. Probably an infection has started. The treatment is the same as for a tooth abscess: **penicillin** for 5 days to fight infection, **heat** to reduce the swelling, and **aspirin or acetominophen** for pain. See page 94 for the proper doses.

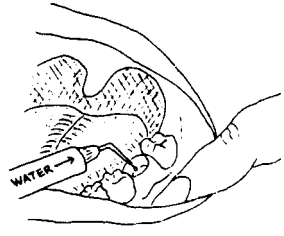
Pain from the Socket

There is always some pain after a tooth is taken out. Aspirin is usually enough to help.

However, sometimes a severe kind of pain starts inside the tooth's 'socket' (the wound) 2 to 3 days after you take out the tooth. This problem is called **dry socket** and it needs special care.

TREATMENT:

1. Place a dressing inside the socket. Change it each day until the pain stops.



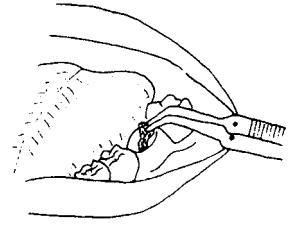
First, clean out the socket.

Squirt warm water inside the socket with a clean syringe. After the person spits out the water, squirt water inside once more. Use a blunt needle so that it does not hurt the gums or bone if it touches them.

Second, prepare the dressing.

Soak 1 to 2 small pieces of cotton in eugenol (oil of cloves.)
Squeeze each piece so that it is damp but not wet.

Note: There may be local medicine in your area that relieves pain. Use it instead of eugenol.



Third, place the dressing gently inside the socket.

Place one piece of dressing into each root space. Push it down into the root space gently.

Cover the socket with plain cotton gauze, and send the person home bitting against it. He can remove the plain cotton in an hour. The dressing should remain inside the socket.

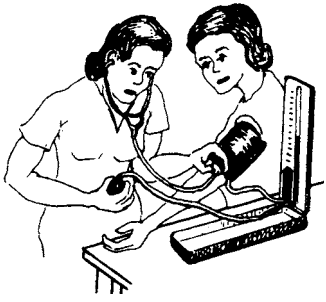
2. Give aspirin or acetominophen for pain (page 94).

Bleeding from the Socket

When you take out a tooth it leaves a wound, so you can expect some blood. However, if the person bites firmly against a piece of cotton, it usually controls the bleeding. To help the wound heal (from a clot), tell the person not to smoke, rinse with salt water, or spit for 1 or 2 days after you take out the tooth.

When the first bleeding occurs, put a new piece of cotton on top of the wound and ask the person to close her teeth against it for an hour. Keep her there with you, to be sure she continues to bite on the cotton. (If it is too painful, you may want to inject anesthetic. See Chapter 9.) Change the cotton if it becomes soaked with blood.

TREATMENT (if the bleeding continues):



1. Take her blood pressure (see *Where There Is No Doctor,* pages 410-411). If it is high, you may need medicine to bring it down. That can help slow the bleeding.
2. Look carefully at the wound. If the gum is torn or loose, put in a suture (pages 161–163).
3. Wrap tea leaves in cotton gauze. Soak the bundle in water and then put it on the socket. Have the person bite against it. Or, have her bite against cotton gauze soaked with cactus juice.

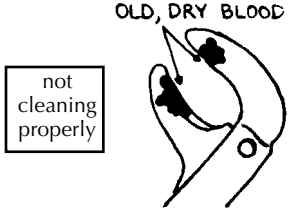
   Let the person go home only when the bleeding stops. Give her some clean cotton to use in case the bleeding starts again later (see page 161).

TETANUS

This is a very serious infection. Tetanus germs enter the body when a wound, like a wound on the bottom of the foot, gets dirty. Germs can also be carried to the socket when you use a dirty instrument to take out a tooth. To avoid this, **carefully read pages 86 to 89.**

SIGNS:

- the jaw becomes stiff and tight
- it is hard to swallow
- the whole body becomes tight, with sudden spasms



TREATMENT:

A person with signs of tetanus requires **immediate** medical help. See *Where There is No Doctor,* pages 182 to 184, if you cannot get help immediately.

INFECTION INSIDE THE SPIT (SALIVA) GLAND

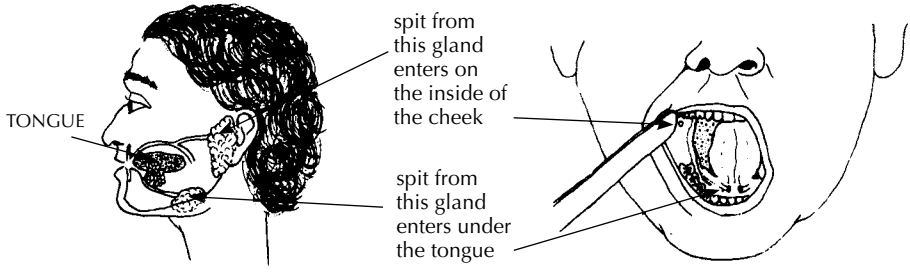
Spit glands are places where the spit or saliva is made. They are located in front of the ear and under the jaw, on each side of the head. If there is an infection inside a spit gland, the face will become swollen and the area will hurt.

Spit is sent from the gland to the mouth through a thin pipe called a duct. Ducts open into the mouth in two places: on the inside of each cheek and under the tongue.

A small stone can often block a duct and cause an infection in the spit gland and swelling of the face. You may be able to feel the stone near where the duct enters the mouth.

SIGNS:

- swelling in the area of the spit gland.
- pain which gets worse when the person is hungry, and when he sees or smells food.
- the opening of the duct is red, swollen, and hurts when you touch it.



TREATMENT:

Reduce the infection and swelling first. Later try to remove the stone.

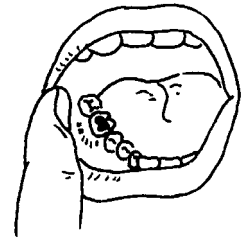
1. Give penicillin for 5 days (page 94). If the swelling is large and the infection serious, start with short-acting crystalline penicillin (see page 204).
2. Give aspirin or acetominophen for pain (see page 94).
3. Apply a wet hot cloth to the swelling as often as possible.
4. Give enough soft food to prevent the person from feeling hungry. The pain will be less then.
5. When the person feels better, a dentist or doctor can remove the stone that is blocking the duct.

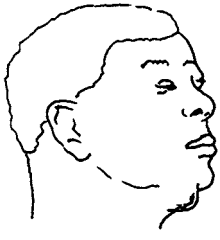
SORES ON THE FACE

Whenever you see a sore on a person's cheek or under his chin, remember there may be a tooth or gum problem. If it is a gum problem, it may be *Noma.* See the following pages.

A bad tooth:

Ask him to open his mouth. Look for an infected tooth in the area of the sore.There may be a large cavity and the tooth may be loose.





Or the tooth may be darker in color than the others. This is because it is dead.

The pus is draining onto the skin, so the pressure is reduced and the person does not complain of pain.

TREATMENT:

1. Take out the tooth (see Chapter 11).
2. Give penicillin for 7 days (see page 94).
3. After the penicillin treatment, check the sore. If it has healed, there is no longer infection inside. The treatment is finished.

But if the sore is still open and you can squeeze out pus, you will need the help of experienced health workers who can:

- test the pus to see if it is resistant to penicillin. **The person may need to take a different antibiotic.**
- take an X-ray to see if there are dead pieces of bone which are keeping the infection alive. If there are, they must be removed.

If infected gums (and not a bad tooth) are the cause of a sore on the cheek or chin, the problem is more serious. See the next 4 pages.

NOMA

When a child is sick, a simple gum infection can get out of control and spread through the cheek to the face. When that happens the condition is called **Noma** or **Cancrum Oris.** Noma is a complication of Vincent's Infection of the gums (page 102).

You will usully see Noma in children. It will only develop if these 3 things are true:

(1) The child's general resistance is low. Usually, he is undernourished and anemic (lacks iron). He may have tuberculosis.

(2) The child has Vincent's Infection.

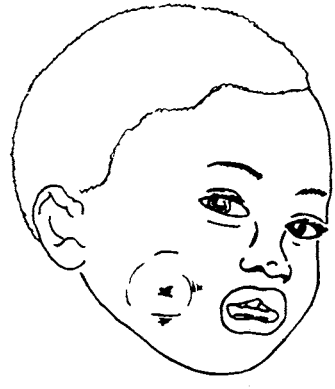
(3) The child has recently had a serious illness such as measles or malaria.

Noma can also be a problem for adults living with HIV. See page 185.

SIGNS:

The infection starts in the mouth. Then it passes to the gums.

1. Sore mouth with itching gums.
2. Swollen, sore gums.
3. Gums bleed when eating or when teeth are cleaned.
4. Bad breath, spits a lot.

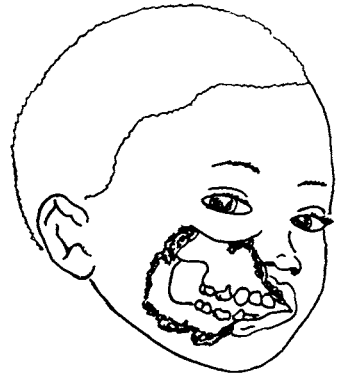


Then it reaches the jaw.

5. Loose teeth.
6. Loose pieces of bone around the teeth.

Finally, it affects the cheek.

7. Skin is tight with dark red swelling.
8. Black spot on the cheek breaks open, leaving a hole into the mouth.
9. A line separates dead tissue from healthy tissue.



TREATMENT:

You must start treatment for Noma immediately in order to prevent the hole from getting bigger. The bigger the hole, the tighter the scar that forms after you close the hole. A tight scar will prevent the child from opening his mouth and chewing the food he needs to grow stronger.

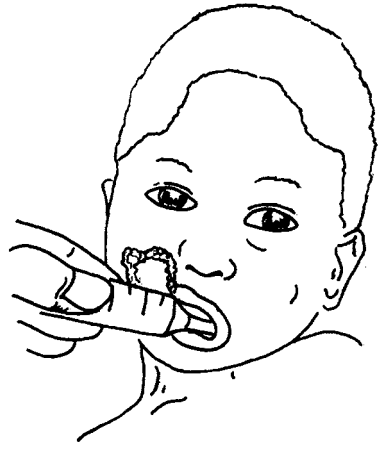
1. Give fluids.

The child needs to overcome both the lack of body water (dehydration) and his lack of resistance to disease.

Start giving the milk-oil drink described on p. 111.

If he cannot drink by himself, help him. Use a spoon or syringe.

Place the fluid on the inside of the healthy cheek and ask the child to swallow.



2. Treat the anemia.

Start giving iron (ferrous sulfate) now. The child should continue taking the tablets or mixture for 3 months, with food.

	Ferrous Sulfate Tablets
over 6 years	200 mg (1 tab) 3 times a day
3–6 years	100 mg (½ tab) 3 times a day
under 3 years	50 mg (¼ tab) 3 times a day

You can also use ferrous fumarate. Advise the mother that the iron will make the child's stool black.

Also give food rich in iron: meat, fish, eggs, dark green leafy vegetables, peas and beans.

Note: A child may have anemia because he has worms. It is a good idea to do a stool analysis to find out. If he has worms, give him medicine right away. Mebendazole, albendazole, and thiabendazole treat many different worm infections. Piperazine treats roundworm and pinworm infections, and there are other medicines for tapeworm and blood flukes. Also give **folic acid.** For doses, see *Where There Is No Doctor,* pages 373 to 376, and page 392.

3. Start antibiotics.

Metronidazole is the best medicine to use. Give 200 mg by mouth 3 times a day for 10 days. You can also use clindamycin. To decide how much to give, weigh the child. For adults, see the medicines and doses on page 185.

Weight	**Dose for clindamycin** (give 3 times a day for 5 days)
5 to 10 kg	50 mg by mouth or 60 mg by injection
10 to 17 kg	100 mg by mouth or 130 mg by injection
17 to 25 kg	150 mg by mouth or 225 mg by injection
over 25 kg	250 mg by mouth or 333 mg by injection

4. Treat the other illness that helped Noma to develop.

It is wise to assume that the child has malaria and to begin treating with antimalarial drugs (see *Where There Is No Doctor,* pages 364 to 367).

Look for any other illnesses and treat them, too, especially measles and tuberculosis.

5. Clean the sore.

Gently pull away any dead skin with tweezers. Wash the inside of the sore with hydrogen peroxide. (Be sure you measure the hydrogen peroxide carefully. See page 8.) Then put in a wet dressing. (You can also clean the sore with an iodine solution.)

The dressing:

- Soak cotton gauze in salt water. Squeeze out the extra water so that it is damp but not wet.
- Put it in the hole and cover it with a dry bandage.
- Every day, remove the bandage, wash the hole with hydrogen peroxide, and put in a new dressing. Do this until the hole does not smell anymore and there is no more dark dead skin.

6. Remove the loose teeth and dead bone.

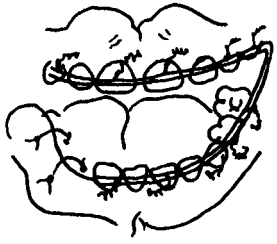
You can use a local anesthetic (Chapter 9). Usually there is not much bleeding. If gums are loose, join them with a suture (see pages 161 to 163).

7. Keep the mouth clean.

- Use a soft brush gently to clean the remaining teeth. Do this 3 times a day for the child.
- Wipe the gums with a weak solution of hydrogen peroxide. Use cotton gauze that is damp with the solution. Do this every 2 hours for 5 days.
- Then after 5 days, start rinsing with warm salt water 3 cups a day.

8. Get advice on whether surgery is needed.

Unfortunately, the child will probably need surgery, to release the scar. Without this surgery, the child will not be able to open his mouth properly.



Send the child for medical help when the infection is finished and the wound starts to close.

You may also need a dentist's help at this time. The child's jaws may need to be wired. The wires are put on the healthy teeth in a way that holds the mouth open while the tight scar is forming. When the wires are removed, the child will be able to open and close his mouth to chew food.

PREVENTION OF NOMA:

Noma need not occur. We can prevent it. Always give special attention to the mouth of a sick child, to be sure to keep his teeth clean.

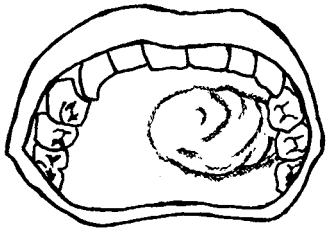
Whenever someone is nursing or caring for a sick child, that person should clean the child's teeth as a normal activity. This is especially true for a child who is weak, undernourished, and with little body water (dehydration).

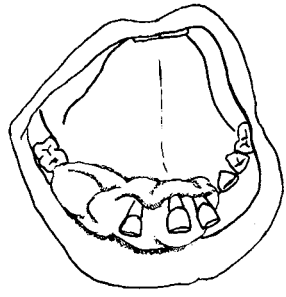
Such a child should always:

- have his teeth carefully cleaned each day with a soft brush.
- rinse his mouth with a warm salt water solution (page 7), 2 times a day.
- eat fresh fruits and vegetables, especially the kind that have Vitamin C: guavas, oranges, pineapples, papayas, tomatoes, peas, and dark green leaves.

TUMOR

A tumor is a lump that grows under the skin or inside the bone. It grows slowly but steadily, usually without any pain.



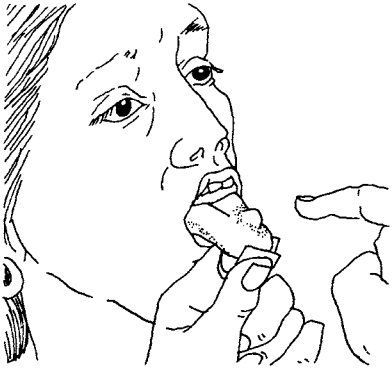


If the swelling does not get better after 5 days of antibiotics and heat treatment (page 94), it may be a tumor.

TREATMENT:

Do not waste any more medicine or any more time. **A tumor may be cancer.** Send for medical help. Surgery is needed to remove a tumor.

CANCER



Any sore or bump that does not heal within 2 weeks may be cancer. The lips and tongue are the 2 places in the mouth where cancer starts most often. Also check the floor of the mouth under the tongue, the soft part of the roof of the mouth, and the gums.

Cancer is deadly.
Cancer can spread quickly to the inside of the person's body where you cannot see it. This can lead to the person's death. But cancer can be treated if you notice it early.

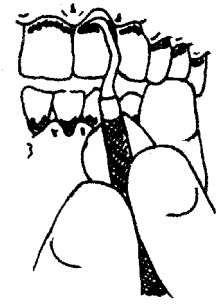
TREATMENT:

Whenever you treat a sore and it does not get better, send the person for medical help immediately. A doctor can cut out a piece from the sore, look at it under a microscope, and decide if it is cancer. If it is cancer, you will need specialized treatment.

CHAPTER 8

Scaling Teeth

Scaling means 'scraping away.' You can scale old food, tartar, or even a fish bone caught under the gum. You usually scale teeth to remove tartar.



We get tartar when the coating of germs on our teeth (page 50) becomes hard.

Gums that press against tartar become sore and infected.

Clean teeth keep our gums healthy. Scaling a person's teeth gives infected gums a chance to become normal again.

However, **gums remain healthy only when we keep the teeth beside them clean.** If we are not careful about cleaning our teeth after they are scaled, tartar will soon return. Instead of being healthy, the gums will become sore and infected again.

Scale a person's teeth, but also teach how to keep teeth clean.

You must remove something caught under the gums (page 133) before it causes more pain and swelling. Remove a piece of fish bone or piece of mango string **now.**

If the person has a mild gum problem (gums that bleed), wait a week or so before scaling. If the person uses this time to clean his teeth better and to rinse with warm salt water (page 7), the gums will improve. The person's teeth will be easier for you to scale, and he will learn that he can do much by himself to care for the gums.

Use a mirror to show the person gum infection inside his own mouth. Later he can see the improvement he has made. He can learn about how to keep gums healthy as he follows his own progress.

Scale a person's teeth only when he really wants to try to keep them clean. If he does not want to clean his teeth, the tartar will soon return. Do not waste your time scaling the teeth of a person who does not want to learn.

THE INSTRUMENTS YOU NEED FOR SCALING

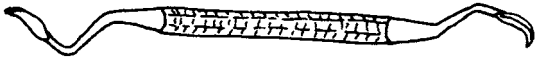
We scale teeth with special instruments called **scalers.** There are many different kinds of scalers for different teeth, to make scaling easier. It can be a problem to know which ones to buy.

Scalers are expensive instruments. For that reason, it is better to order only a few instruments that you can use to clean most teeth.

You need only 2 double-ended scalers, or 4 single-ended scalers.

For instance:

1. **One with two pointed tips**—to remove tartar from the part of the tooth **near** the gum.



Its proper name is *Ivory C -1 scaler.*

2. **Another with two blunt, rounded ends**—to remove tartar from the part of the tooth **under** the gum.

Its proper name is *G-11 and 12 curette.*

The ends of the scaler are the important parts. One end is bent to the left and the other end is bent to the right, so you can reach more easily around all sides of the tooth.

The blade at each end of the scaler is sharp. You must keep the blade sharp. A sharp blade can break more of the tartar away than a blunt blade.

You also need these:

Sharpening stone (Arkansas stone)

Mirror

Probe (explorer)

Tweezers (cotton pliers)

NOTE: When you order an instrument, use both its common and proper name. Then you have a better chance of receiving the instrument you want. You can also make some of your own instruments. See pages 208-210.

Keep everything in a Scaling Kit.

HOW TO SCALE TEETH

Tartar starts to form inside the gum pocket. There it builds up, because the gums protect it. So you often must **feel** rather than see the tartar when you scale a tooth.

You must remove all of the tartar so the gums can heal. **New tartar grows faster when there is old tartar left behind for it to build upon.**

Lay out what you need ahead of time:

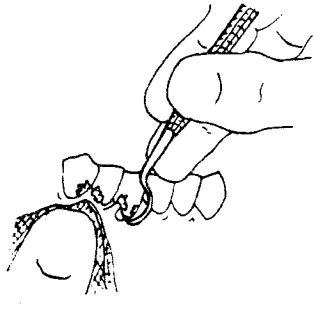
- ✓ your instruments: scalers, mirror, probe, tweezers
- ✓ sharpening stone
- ✓ cotton gauze

Your light must be good enough to see the tooth and gums around it clearly. Scaling teeth requires time and practice. Make yourself and the person comfortable. You can sit next to a special chair that lets the person lean back (see page 75).

The steps in scaling teeth are these (pages 135–139):

1. Explain to the person what you are going to do.
2. Feel under the gum for rough spots (tartar).
3. Place the scaler under the tartar.
4. Pull the scaler against the side of the tooth.
5. Check to be sure the tooth is smooth.
6. Explain what you have done and what the person should now do.

1. **Explain what you are going to do.** Tell the person what to expect. There will be some bleeding and possibly some pain. However, you can stop and rest, or inject local anesthetic, if it is painful. Remember: first wash your hands and your instruments! (See pages 86–89.)
2. **Feel under the gum for tartar.** Tartar feels like a rough spot on the root of the tooth. Since tartar can form anywhere inside the gum pocket, feel for it on all sides of the tooth.



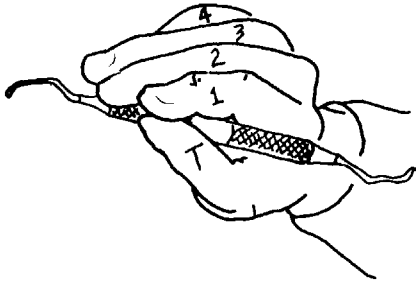
You can check for tartar two ways:

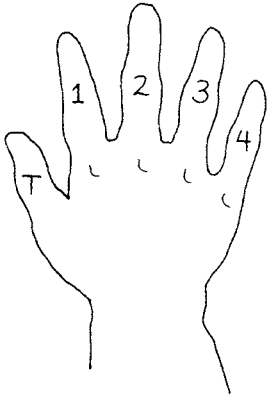
a. **Use your probe.** Slide the point up and down along the root surface under the gum. Feel for places that are rough. Teeth without tartar are smooth.

b. **Use cotton gauze.** Twist a corner and press it between the teeth. The gauze lowers the gum and soaks up the spit. You can then see more tartar.

3. **Place the scaler under the tartar.** You must learn two important things: how to hold the scaler and how to slide the scaler into the gum pocket.

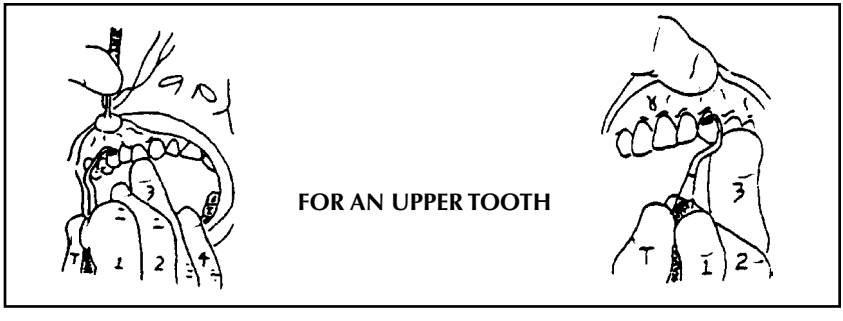
Hold the scaler almost as you would hold a pen. You can then pull it against the tartar with both power and control.

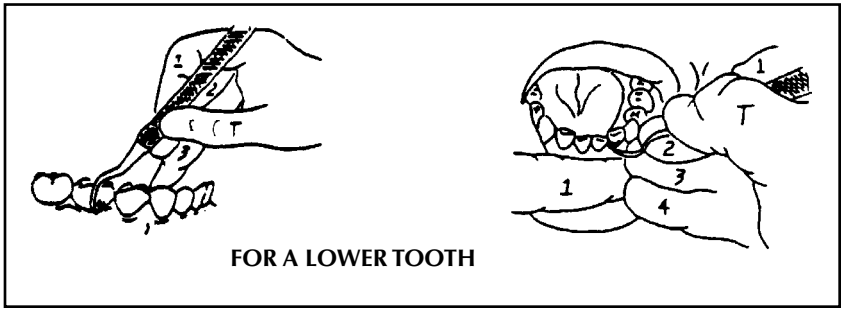




Control is very important. The ends of the scalers are sharp. If you are not careful, the blades can cut the gums. Be gentle and do not hurry. Always hold the tip of the scaler on the tooth to avoid poking the gums.

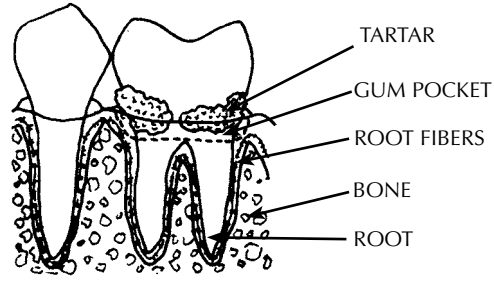
Rest your 3rd finger against a tooth. This will steady your hand and let you slide the sharp scaler under the gum with care.



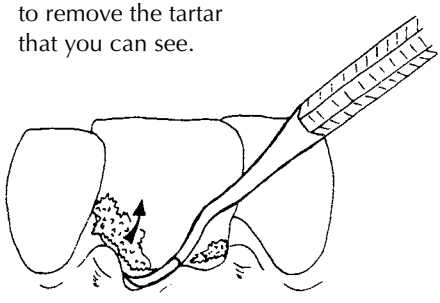


The edge of the gum, near the tooth, folds under to form a pocket. This **gum pocket** goes completely around each tooth. The gum pocket can be shallow or deep. A deep pocket means there has been an infection for a while.

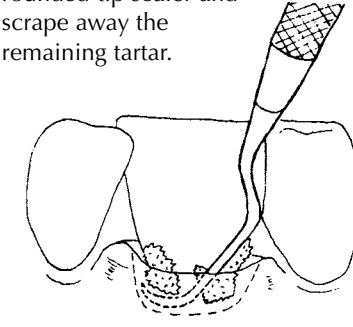
Tartar starts forming deep inside the gum pocket. If you remove tartar that you can see above the gum, it is helpful, but not good enough. You must remove the rest of the tartar, or the infection will continue. If part of the tartar stays on the tooth, the infection will continue.



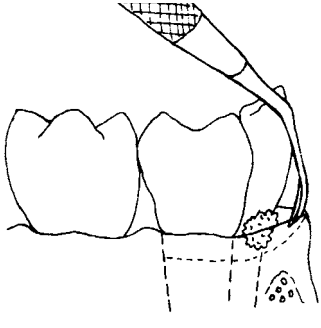
First, use the pointed-tip scaler to remove the tartar that you can see.



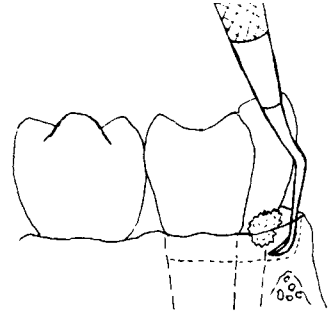
Then, go back with your rounded-tip scaler and scrape away the remaining tartar.



Be careful when you place the rounded end of the scaler inside the gum pocket.

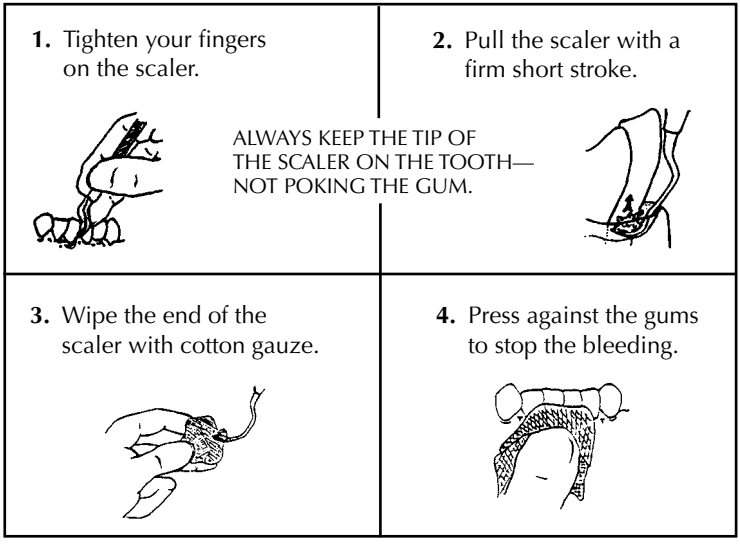


a) Put the sharp face of the blade against the tooth. Slide it along the tooth down into the gum pocket.

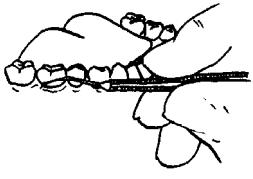


b) You can feel the edge as it goes over the rough tartar. Stop when you feel the bottom of the gum pocket.

4. **Hold the end tight against the side of the tooth and pull the scaler.** Try to break free as much tartar as possible at once. It is a bad idea to remove the tartar a bit at a time, because the remaining tartar becomes smooth and harder to scrape away.


1. Tighten your fingers on the scaler.
2. Pull the scaler with a firm short stroke.
ALWAYS KEEP THE TIP OF THE SCALER ON THE TOOTH—NOT POKING THE GUM.
3. Wipe the end of the scaler with cotton gauze.
4. Press against the gums to stop the bleeding.

5. **Check to be sure the tooth is smooth.**

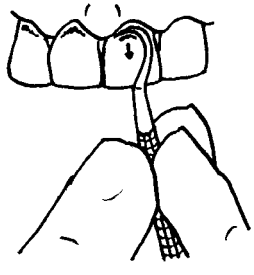


With your probe, feel under the gum for any place that is still rough.

When all the sides of the tooth feel smooth, move to the next tooth.

Do not hurry. It is more important to take your time and carefully remove all the tartar. If the person has a lot of tartar, scale only half the mouth now. Do the other half on another day, as soon as the person can return.

Finally, make the tooth look clean. Use the sharp edge of either scaler. Scrape away the dark material on the front and back sides of the tooth.



The tooth itself has not turned dark. It is just a stain. People most often get these stains when they eat meat, drink tea or smoke tobacco.

You can scrape away this old food and uncover the white tooth. **But remember:** the teeth will turn dark again if not cleaned carefully every day.

6. **Talk to the person about what you have done and what to expect.** The gums will be sore for the next few days. That is normal.

   Then explain to the person what to do to make the gums strong and tough again.

   - **Clean your teeth better with a soft brush.** Reach with the brush into the gum pocket, and behind your front teeth. That is where tartar collects most often (page 69).
   - **Clean between your teeth.** Use your brush, the stem from a palm leaf, or a piece of strong, thin thread (page 71).
   - **Rinse your mouth with warm salt water.** Start with 4 cups a day, to make the gums strong. Then use 1 cup a day to keep them strong (page 7).
   - **Eat local foods that give strength to gums.** Fresh fruits like guava and oranges, and fresh vegetables with dark green leaves are good for the gums.

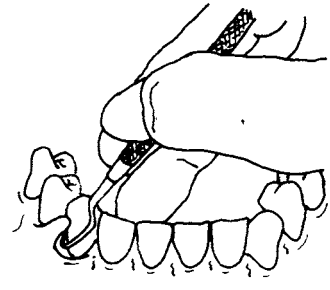
REMOVING SOMETHING FROM UNDER THE GUM

If the gum between two teeth is red and swollen, something may be caught inside the gum pocket. Ask what the person has been eating. The object may be a fish bone, mango string, or a sharp piece of tartar.

First try to feel the object with your probe. Then remove it using a scaler or a piece of strong thread.

Use the rounded-tip scaler in the same way as you would to remove tartar.

Feel the object, go under it gently, and then lift it out.



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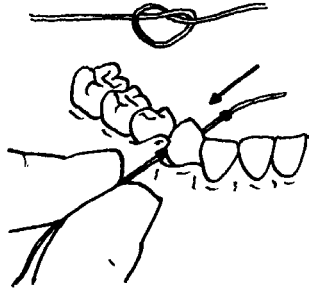


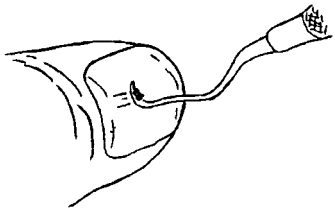
Tie a knot in a piece of thread. Then slide the thread between 2 teeth (page 71).

However, do not move the thread up and down. Instead, pull it and the knot out the side. The knot can pull the object out with it.*

* If the gum has grown into a kind of tumor ***(epulis),*** an experienced dental worker should cut it away.

KEEP YOUR SCALING INSTRUMENTS SHARP AND CLEAN

A sharp scaler bites into tartar better than a blunt one. Sharpen the edge whenever you feel it sliding over the tartar.



From time to time, feel the cutting edge to be sure it is sharp.

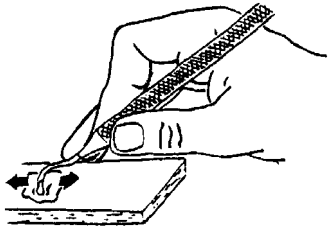
Scrape it against your fingernail. If the cutting edge is not able to cut your nail, it will not be sharp enough to break the tartar free.

Sharpen the cutting edge of the scaler on a fine-grain stone (Arkansas stone). Put a few drops of oil or water on the stone first, so the scaler can slide against it more easily.

Rest your 2nd or 3rd finger against the side of the stone. This is for control.

Rub the cutting edge against the stone. Move it back and forth.

Turn the round scaler as you sharpen it. This helps to keep the scaler's round shape.



Scalers must be more than clean—they must be sterile. This is because there may be spots of blood on them. Hepatitis *(Where There Is No Doctor,* page 172) and other diseases can pass from the blood of one person to the blood of another person. To learn how to sterilize, see pages 87 and 88.

Your mirror, probe, and canon tweezers do not need sterilization. A disinfectant (see page 89) will clean them. Dry all the instruments with a towel. Then wrap them inside a clean cloth and put them in your scaling kit. They are now ready for use whenever you need them again.

Remind each person: scaling is not a cure. Rather it is a way of giving her a new start. Only she can give herself the care she needs to keep her gums healthy. You have removed the hard material from her teeth, and if she brushes carefully, the tartar will not return!

CHAPTER 9

Injecting Inside the Mouth

It is possible to treat a tooth without pain. You do this with an injection of local anesthetic. You must inject near the nerve, so **to give good injections, you must know where the nerves are.**

Injecting is a skill that develops with experience. The best way to learn is not from a book, but from a person who has experience giving injections.

Watch an experienced dental worker give injections. That person can then watch you and show you how to inject carefully and safely.

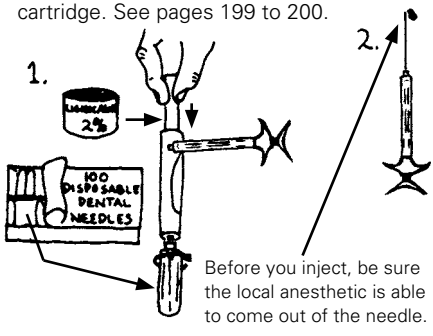
Local anesthetic is an injectable medicine. When it touches a nerve, the tooth joined to that nerve feels numb or dead for about an hour. This usually gives you enough time to take out a strong tooth or to put a cement filling into a deep cavity.

WHAT YOU NEED TO INJECT

There are two kinds of syringes for injecting local anesthetic inside the mouth. One is made of metal and the other is made of glass. The metal syringe uses local anesthetic in a cartridge. The glass syringe uses local anesthetic from a bottle.

DENTAL (METAL) SYRINGE

This is a dental syringe. It uses special needles, and the local anesthetic is sealed inside a glass cartridge. After injecting, safely dispose of the needle and the cartridge. See pages 199 to 200.

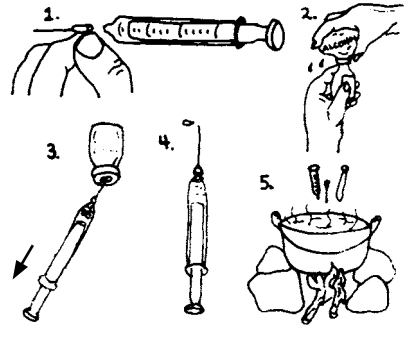


Before you inject, be sure the local anesthetic is able to come out of the needle.

Use a new needle and a new cartridge of local anesthetic for each person.

GLASS SYRINGE

This kind of syringe is for injections of medicine like penicillin, but you can use it in the mouth. Sterilize the syringe and needles (pages 88 and 138) before and after each use. When sterile, the needles are ready for another person.



Be careful! Do not touch the needle.

It is safer to use the metal dental syringe but it depends on the local anesthetic you can get. Order needles to fit your particular kind of syringe.

METAL SYRINGE

Order:

1. syringe: aspirating dental cartridge syringe, 1.8 ml (1ml=1cc)
2. needles: disposable needles for dental cartridge syringe (27 gauge, long)

   one box contains 100 needles, each one inside a plastic cover.
3. local anesthetic: local anesthetic cartridges for a dental syringe

   one sealed tin contains 50 cartridges of lidocaine (lignocaine) 2%.

PLASTIC OR GLASS SYRINGE

Order:

1. syringe: standard syringe that holds around 3 ml (1ml=1 cc)
2. needles: 24 gauge, long (40 mm x.56 mm or similar)
3. local anesthetic: 20 ml bottle of lidocaine (lignocaine) 2%

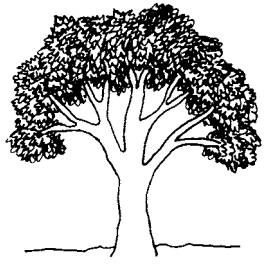
   or, if not available: order 2 ml ampules of procaine hydrochloride 1%.

NOTE: Lidocaine will keep the teeth numb longer if there is **epinephrine** in it. But this is more expensive, and you should not use it on persons with heart problems (see the bottom of the next page).

WHERE TO INJECT

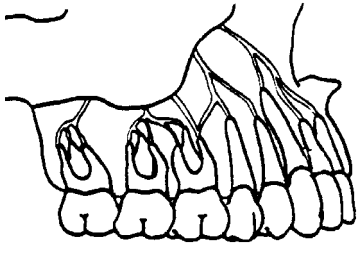
You can deaden a nerve with an injection of local anesthetic:

1. near the **small nerve branch** going inside the root of a tooth.
2. near the **main nerve trunk** before it divides into small branches.



Smaller nerves 'branch' off from the main nerve—much like branches of a tree leave its main trunk.

One small nerve then goes to each root of every tooth.



Inject an upper tooth near its roots.

Bone in the upper jaw is soft and spongy.

Local anesthetic placed near the root of an upper tooth can go inside the bone and reach its nerve easily.

The same injection also makes the gums around that side of the tooth numb.

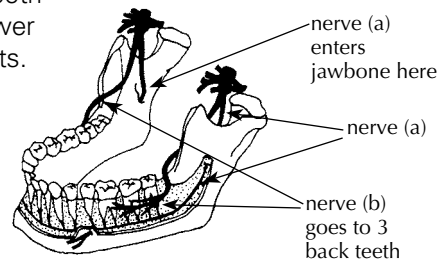
It is more difficult to inject the lower teeth.

The lower jaw bone is thicker. When you inject near the roots of a lower tooth, the anesthetic is not able to reach its nerve as easily.

Note: You can inject lower front teeth in young children, or very loose lower front teeth in adults, near their roots.

To make a lower tooth completely numb, you must block the main nerve (a) before it goes inside the jaw bone.

If you are treating a back tooth, you must give a second injection for nerve (b). See page 140.



These 2 injections also make the gums around the teeth numb.

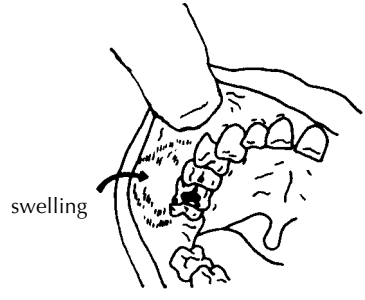
WHEN TO INJECT

Inject local anesthetic whenever the treatment you give may hurt the person. If, after you inject, the person says the tooth still hurts, be kind. Stop and inject again.

Inject local anesthetic slowly and carefully.
You can then treat a bad tooth and not hurt the person.

HOW TO INJECT*

For a good, safe injection, remember these 5 things!



1. **Do not inject local anesthetic into an area that is swollen.** This can spread the infection.

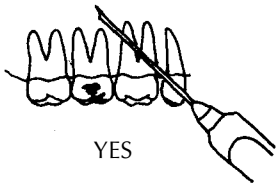
   Also, pus inside the swelling stops the local anesthetic from working properly.

   Instead, treat the swelling first (page 94) and take out the tooth later.

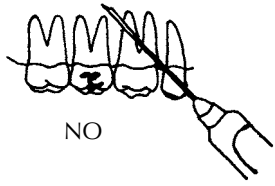
2. **If the person has a heart problem, do not inject more than 2 times in one visit.** Also, it is best not to use an anesthetic with epinephrine on persons with heart problems. Use lidocaine only, or mepivacaine 3% only.

* Local anesthetics are the only injections given in the mouth. To learn about injecting antibiotics, see page 204.

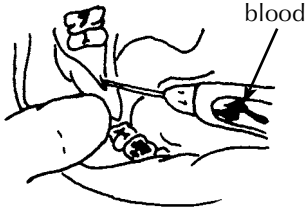
3. **Before you push the needle under the skin, be sure its pointed end is facing in the correct direction.**



The local anesthetic must come out against the bone, where the nerve is.



4. **Before you inject the local anesthetic, wait a moment to see if any blood enters the syringe.** (Note: only an *aspirating* syringe will do this.)



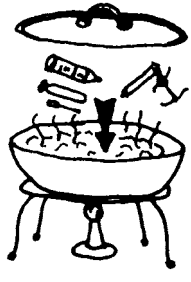
Pull back on the plunger. If blood comes inside, it means you have poked a blood vessel.

Pull the needle part way out and gently move it over to a different place.

If you inject local anesthetic into the blood vessel, there will be more swelling afterward, and the person may faint. If the person faints:

- Lie him on his back.
- Loosen his shirt collar.
- Lift his legs so they are higher than his head.

5. **Be sure your syringe and needles are clean and sterile** (see pages 86 to 89). Do not pass an infection from one person to another by using dirty needles.



FOR GLASS SYRINGES:

Boil the syringe and needle in water (page 88) for at least 30 minutes in a covered pot. It is also a good practice to boil your metal syringe.

FOR METAL SYRINGES:

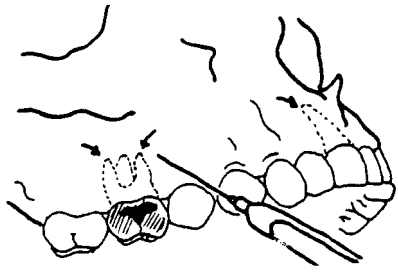
- **Use a new cartridge for each person who needs an injection.** Do not use local anesthetic from a cartridge that you have used on another person.
- **Use each disposable needle only 1 time** and then throw it away in a box like the one on pages 199 to 200. If you must reuse a needle, replace the cap very carefully and put the needle in a safe place (such as a pan of bleach solution) until you are ready to clean and sterilize it (see pages 87–88).

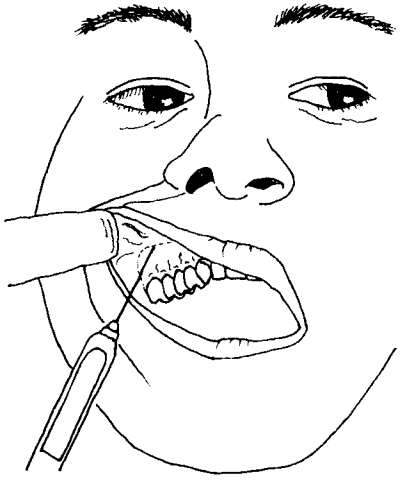
Injecting the Upper Teeth

Inject local anesthetic near the root of the tooth you want to treat.

Front teeth have one root. Back teeth have more than one.

For a tooth to become completely numb, the local anesthetic must touch the small nerve going to each one of its roots.





1. **First decide where to inject.**

   Lift the lip or cheek. See the line that forms when it joins the gum.

   The needle enters at the line where the lip or cheek meets the gum.

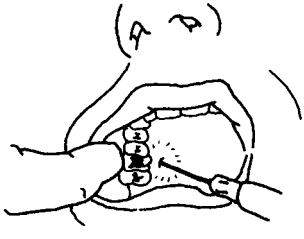
2. **Push the needle in,** aiming at the root of the tooth. Stop when the needle hits bone. Inject about 1 ml of local anesthetic (½ of a cartridge).

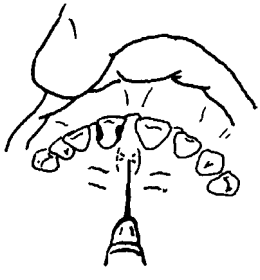
   Pull the needle part way out and move it over to the next root. Inject again.

If the tooth is to be taken out, leave .25 ml for the next step.

3. **If you are taking out a tooth, also inject the gums on the inside.**

   Ask the person to open wide. Inject the remaining anesthetic (.25 ml) directly behind the back tooth that must come out.





One injection can numb the gum behind the 6 front teeth. Inject into the lump of gum behind the middle front teeth.

(Note: This injection hurts! It may help to use 'pressure anesthesia.' See page 141.)

4. **Wait 5 minutes** for the tooth to become numb.

Injecting the Lower Teeth

When you block the nerve, it affects all of the teeth as well as gums on that side. However, it takes practice to do this successfully. **Ask an experienced dental worker to help you learn how to give this injection properly.**

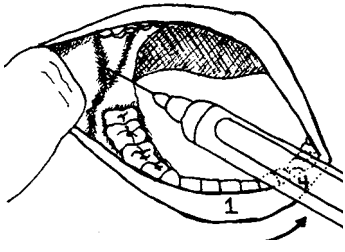
Stand in such a way that you can see clearly where you need to inject. Ask the person to open wide.

1. **First feel for the place to be injected.**

   Put your thumb beside the last molar tooth. (Wash your hands first! See page 86.) Feel the jawbone as it turns up towards the head. Rest your thumb in the depression there.

2. **Press against the skin with the end of your thumb.**

   The skin forms a 'v' shape. Your needle must go into the 'v'.



Hold the syringe on top of tooth number 4 and aim the needle at the 'v'.

Push the needle in until it hits the jawbone, (about ¾ of the length of a long needle). Pull back on the plunger of the aspirating syringe to check for blood (page 138).

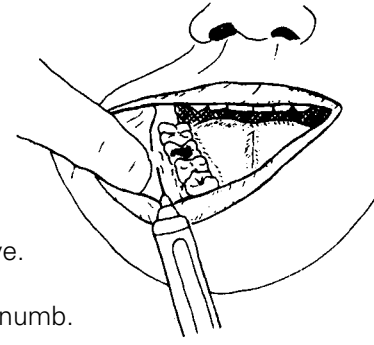
Inject 1.5 ml of local anesthetic (¾ of a cartridge).

Try to feel your way: If you hit bone too early, pull the needle part way out and move it over so that it points more toward the back of the mouth. Try again.

If you do not hit bone, the needle is too far back. Pull it part way out, and point it more toward the front. Push it in again.

3. Give a second injection BESIDE the back teeth.

If you are going to fill or remove a back tooth, inject beside that tooth, where the cheek joins the gum.



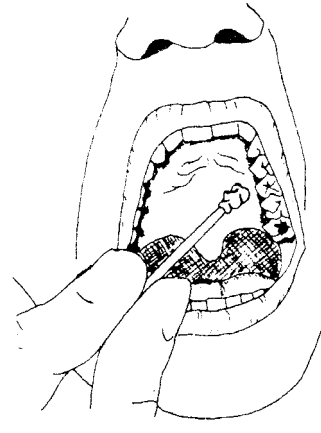
Inject .5 ml of local anesthetic (¼ of a cartridge).

This injection is not needed for front teeth. It is enough to block the main nerve.

4. Wait 5 minutes for the tooth to become numb.

Take time with children

1. Put some topical anesthetic on the gum before you inject. But be sure the gums are dry in that place. If you wipe the gum with cotton, the topical anesthetic will stay on longer. Give the anesthetic time to work: wait a minute before injecting.



If you do not have topical anesthetic, try using pressure. You can use 'pressure anesthetia' whenever you have to give an injection in a sensitive place, like the roof of the mouth.

Wind some cotton around the end of a match-stick. Press firmly for a minute behind the bad, tooth. Then inject quickly into the depression that formed where you pressed.

2. Be sure the anesthetic is warm when you inject it. Hold the cartridge or bottle in your hands for a few minutes before you use it.

3. Use a new, sharp needle.

4. Have someone pass you the syringe out of sight of the child. Then the child will not have to look at it and be frightened.

5. Be ready to stop the child from grabbing the syringe.

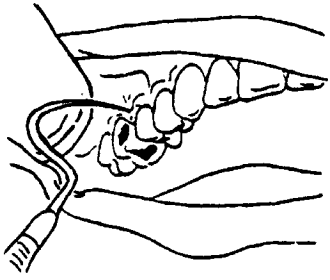
6. Inject the anesthetic slowly. Do not hurry. A too-quick injection can cause sudden pressure, which hurts and frightens the child.

AFTER YOU GIVE AN INJECTION

Before you begin treatment, test the tooth and gums to be sure that they are numb. Wait 5 minutes for the anesthetic to start working. Ask the person how his lips feel—they should feel 'heavy' or numb. Then test the area.

Poke the gums between the teeth with a clean probe.

Watch the person's eyes—you will see if you are hurting. If the person still feels pain, stop. Think about your injection technique, and inject again.



After you finish treatment, always talk to the person about what you have done. Tell the person what to expect, and how to be careful with the numb area of the mouth:

- The area will feel normal again in about 1 hour.
- Do not bite or scratch the area while there is no feeling.
- Do not drink anything hot. It can burn the skin inside the mouth.

With a child, always place a ball of cotton between the teeth on the side where you injected. The child should leave it there for 2 hours, until the area feels normal again. Explain this to the mother, and give her a bit of extra cotton to take home. It is much better for the child to chew cotton instead of the numb lip or cheek!

Try not to hurt anyone. You can treat a bad tooth easier, faster, and without pain if you inject local anesthetic slowly and carefully into the right place.

CHAPTER 10

Cement Fillings

When someone's tooth hurts, you do not always need to take it out. There may be a way to treat it and keep it. Always ask yourself whether a bad tooth really needs to come out.

This chapter is about filling cavities. Cavities are the holes that tooth decay makes in the teeth.

From this chapter, you can learn:

- When to fill the cavity, or when to take out the tooth.
- How to place a temporary filling.

WHEN NOT TO PLACE A FILLING

Do not fill a cavity if you think there is an abscess in the tooth. Look for these signs of an abscess:

- The face is swollen.
- There is a gum bubble (page 74) near the root of the tooth.
- The tooth hurts constantly, even when the person tries to sleep.
- The tooth hurts sharply when you tap it.

An abscess occurs when germs from tooth decay start an infection on the inside of the tooth. If you cover up an abscess with filling material, it will make the problem worse. Pressure builds up inside the filled tooth, causing even more pain and swelling.

If a tooth has an abscess, take it out (see the next chapter), unless you can give special nerve treatment (root canal treatment).

WHEN TO PLACE A FILLING

You can fill a cavity if the tooth does not have an abscess. There is probably not yet an abscess if:

- there is no swelling of the face or gums near the bad tooth.
- the tooth hurts only once in a while — for example, if it hurts only after food or drink, or when breathing cold air.
- the tooth feels the same as the others when you tap against it.

These signs mean that the decay is deep enough for the nerve to feel temperature changes, but not near enough to the nerve to be infected. So **there is not an abscess. You can save the tooth by filling the cavity as soon as possible.**

WHAT A FILLING CAN DO

A filling can help a person in three ways:

- It stops food, air, and water from entering the cavity. This will stop much discomfort and pain.
- It stops the decay from growing deeper. This can prevent a tooth abscess.
- It can save the tooth, so the person can use it for many more years.

TWO KINDS OF FILLINGS

A permanent filling is made to last for many years. To place one requires special equipment and skills. An experienced dental worker can shape the cavity with a dental drill so it can hold the filling material better (see pages 151–152). Or, a dental worker trained in Atraumatic Restorative Treatment (ART) can fill the cavity with a sticky material called glass-ionomer.

A cement filling is a temporary filling. It is meant to last only for a few months. It helps the person feel more comfortable until it is possible to get a permanent filling.

Replace a temporary filling with a permanent filling as soon as possible.

This chapter shows how to place cement fillings only, for most readers do not have the expensive equipment needed to make permanent fillings. But remember that many people can benefit from the extra time that a temporary filling gives them before they get a permanent filling.

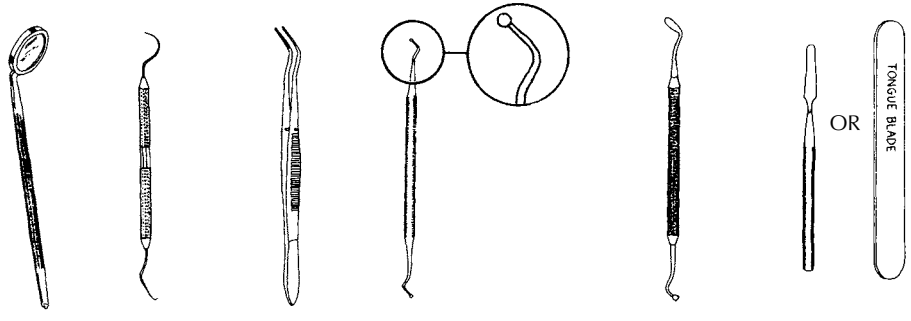
A cement filling is often the first step to saving a tooth.

THE INSTRUMENTS AND FILLING MATERIAL YOU NEED

In many places, government medical stores can provide most of the instruments as well as cement filling material. If this is not possible, a dentist may be able to help you to order what you need.

Instruments

Most dental instruments look alike, but the small end of each instrument is shaped to do a special task. Try to get instruments similar to these and keep them in a kit.



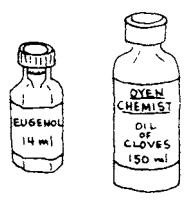
mirror | probe (explorer) | tweezers (cotton pliers) | spoon (spoon excavator) | filling tool (filling instrument) | mixing tool (cement spatula)

Some instruments have more than one name. The second one, in ( ), is the proper name. Use the proper name when you order.

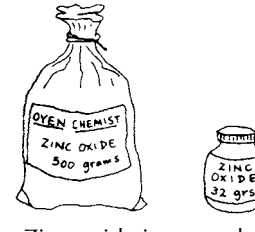
Cement Filling Material

Many companies make temporary filling material. The names on the packages are different. This makes it hard to know which one to order.

However, the basic material of each product is the same—zinc oxide and oil of cloves (eugenol). To save money, order these two main ingredients in bulk, instead of an expensive kind of cement filling material.



Oil of cloves is a liquid.

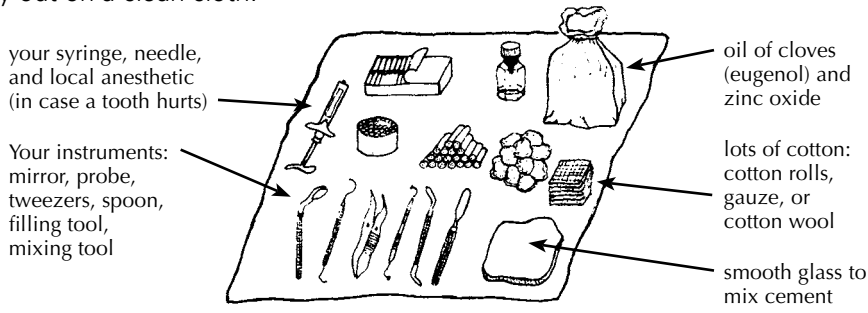


Zinc oxide is a powder.

You may be able to buy a special kind of zinc oxide powder called **I.R.M.** (**I**ntermediate **R**estorative **M**aterial). Fillings with I.R.M. are stronger and harder, so they last longer. But it is more expensive than zinc oxide.

HOW TO PLACE THE CEMENT FILLING

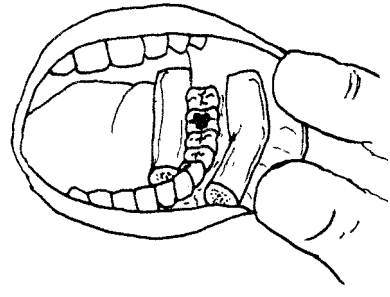
Lay out on a clean cloth:


your syringe, needle, and local anesthetic (in case a tooth hurts)
Your instruments: mirror, probe, tweezers, spoon, filling tool, mixing tool
oil of cloves (eugenol) and zinc oxide
lots of cotton: cotton rolls, gauze, or cotton wool
smooth glass to mix cement

To place a cement filling, follow these 6 steps (pages 146–150):

1. Keep the cavity dry.
2. Lift out some, but not all, of the soft decay. (If the tooth hurts, inject local anesthetic.)
3. Mix the cement.
4. Press the cement into the cavity.
5. Remove the extra cement from around the cavity and the tooth.
6. Explain what you are doing to the person.

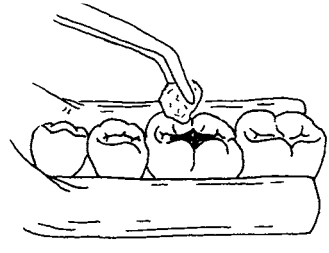
1. Keep the cavity dry. The cavity and the area around it must be dry so you can see what you are doing. Just as important, **cement stays longer inside a dry cavity.**



Place cotton between the cheek and gums to keep the area dry. Put some cotton under the tongue when you work on a lower tooth.

Use whatever kind of cotton you have: gauze, wool, or even rolls.

Change the cotton whenever it becomes wet.



Keep the cavity dry while you work. Wipe the inside of it every now and then with a bit of cotton.

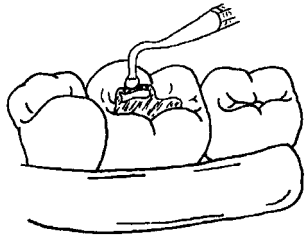
Then leave a piece of cotton inside the cavity while you mix the cement.

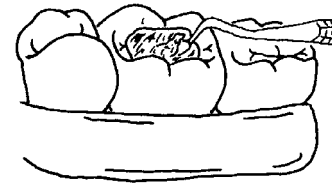
2. **Lift out some of the decay.** You do not need to remove all of the decay on the bottom of the cavity. You can leave some, as long as you cover it with cement. If you try to dig out all of the decay, you might touch the nerve. Try to cover the decay so it stops growing.

   However, you must remove all of the decay from the edge of the cavity. Otherwise, germs and food can go between the cement and the cavity and keep the decay growing inside.

   Scrape clean the walls and the edge of the cavity. If you find that the edge is thin and weak, break it deliberately with the end of your instrument. That makes for stronger sides to hold onto the cement.

   Use the spoon tool and lift out soft decay from inside the cavity. Do not go too deep. Make the cavity just deep enough to give thickness and strength to the cement. **If the tooth hurts when you do this, stop and inject some local anesthetic.** Use cotton gauze to collect the bits of decay so that the person does not swallow them.

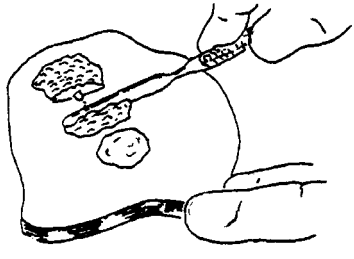


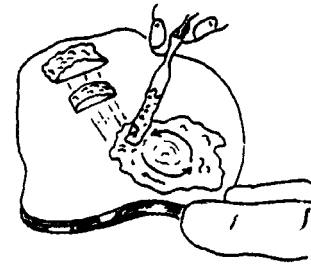


   Use your mirror and look closely around the edges of the cavity for decay that you may have missed. Put some cotton inside the cavity and leave it there while you mix the cement.

3. **Mix the cement** on a piece of smooth glass. Place separately onto the glass a pile of zinc oxide powder and a few drops of eugenol liquid.

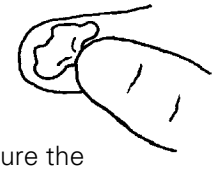
   Pull a small amount of the powder to the liquid with the mixing tool and mix them together. Add more powder in this way, until the cement mixture becomes thick.





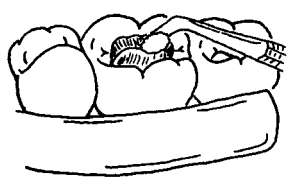
Suggestion: Practice with the cement ahead of time.
You can then find out the time it takes to become hard.

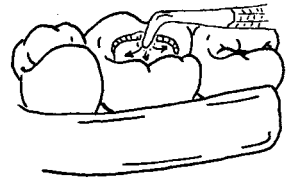
Cement is much easier to use when it is thick and not too sticky. Roll a bit between your fingers. If the cement sticks, it is not yet ready. Add more powder and then test again.



Now take the cotton out of the cavity. Check to be sure the cavity is dry. If the cotton around the tooth is wet, change it.

4. **Press some cement into the cavity.** Put a small ball of cement on the end of your filling tool. Carry it to the cavity. Spread it over the floor of the cavity and into the corners.





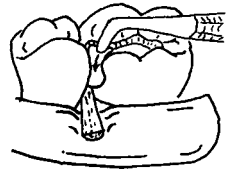
Then add another ball of cement, pressing it against the other cement and against the sides of the cavity.

> REMEMBER: **Decay stops growing only when the cement covers it completely and tightly.**

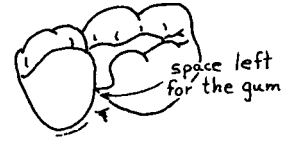
Keep adding cement until the cavity is over-filled. Smooth the extra cement against the edge of the cavity.

If a cavity goes down between two teeth, one other step is necessary. You need to take care that the cement does not squeeze and hurt the gum.

Before you spread the cement, place something thin between the teeth.



before



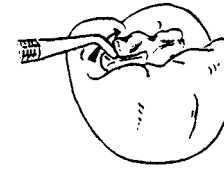
after

You can use the soft stem from a palm leaf, a toothpick, or a tooth from a comb. Be sure it has a rounded end to prevent damage to the gums.

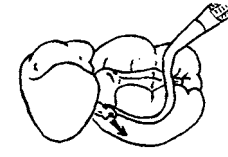
5. **Remove the extra cement before it gets too hard.** Press the flat side of the filling tool against the cement and smooth it towards the edge of the cavity.

   As you smooth the cement, shape it to look like the top of a normal tooth.

   This way, the tooth above or below it can fit against the filling without breaking it.

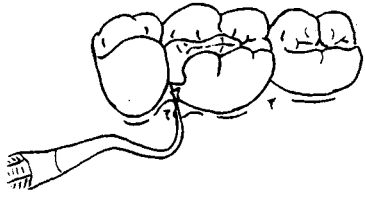


   After you take out the stem or toothpick (p.148), smooth the cement. **Gums stay healthier when the cement beside them is smooth.**



   Cement that sticks out and is not smooth can hurt the gums. It can also later break off. When that happens, spit and germs are able to go inside and start the decay growing again.

   It is also important to look closely around the tooth for loose pieces of cement and to remove them before they make the gums sore.



   Use the end of your probe. Gently reach into the gum pocket and lift out any pieces of cement caught there.

   Wipe off your probe with cotton gauze each time.

   Now remove all the cotton and ask the person to gently close the teeth. The teeth should come together normally and not hit first against the cement filling. **Too much pressure against the cement filling will crack and break it.**

   Always check to see if part of the filling is high:

   (1) If the cement is still wet, you can see the smooth place where the opposite tooth bit into it. Scrape the cement away from this place.

   (2) If the cement is dry, have the person bite on a piece of carbon paper. If there is too much cement, the carbon paper will darken the cement. Scrape away that extra cement.

If you have no carbon paper, darken some paper with a pencil.

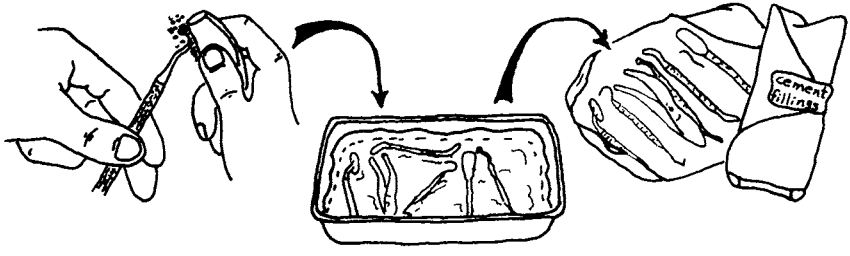
The person must not leave your clinic until the filled tooth fits properly against the other teeth.

6. **Explain things to the person.** Explain how to look after the filling so it will not break:
   - Do not eat anything for 1 hour—let the cement get hard and strong.
   - Try not to use that tooth for biting or chewing. Until there is a permanent filling, the cement and sides of the cavity are weak. They cannot take much pressure.

If the tooth hurts more after you place the cement filling, there is probably an abscess. Take out the tooth. If you cannot take out the tooth immediately because of swelling, take out the filling to relieve the pressure, and take out the tooth after you treat the swelling (page 93).

CLEAN YOUR INSTRUMENTS AFTER YOU FINISH

You do not need to boil your cement filling instruments. In fact, boiling can weaken the small pointed ends.



First scrape the dried cement from the filling and mixing tools. Then, after you scrub them with soap and water, leave them for 20 minutes in disinfectant (see page 89). Finally wrap the instruments together in a clean cloth so they are ready for use when you need them again.

REMEMBER: **A cement filling is only a temporary measure.** A good one can last up to 6 months. During this time, the person must see a dental worker who has the equipment to put in a permanent filling. For this, the person may have to travel to the city, or wait for the dental worker to visit your area.

ABOUT PERMANENT FILLINGS

This chapter has shown how to place a **temporary** filling. Remember that within a few months, the person needs to replace this filling with a **permanent one.** This book does not give full instructions for placing permanent fillings, but if you have been trained to place permanent fillings with a dental drill or using Atraumatic Restorative Treatment (ART), see pages 211 and 215-216 for ideas about getting equipment and resources.

Some Simple Dental Drills

We use a dental drill to remove all decay from a cavity and to change the shape of the hole in the tooth so it can firmly hold the permanent filling material. The most expensive drills use electricity, but some drills are powered by people instead of electricity.

Village dental workers in the mountains of western Mexico use bicycle power to make compressed air, which runs a high speed drill.

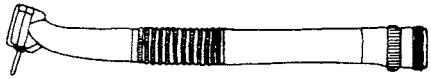
Local young people or family members volunteer to pump the air while they wait to have their own teeth fixed.

In India and Guatemala, health workers use a foot treadle to power a drill, the same way they operate a sewing machine. This kind of drill is slower than a compressed-air drill, and the grinding produces a lot of heat, so one must take care not to let the tooth ge so hot that it kills the nerves (see page 152). Still, this is one of the simplest and cheapest ways to place a permanent filling.

There are many other excellent ideas for simple, low-cost dental drills. Some are lightweight, so you can carry them to remote areas.*

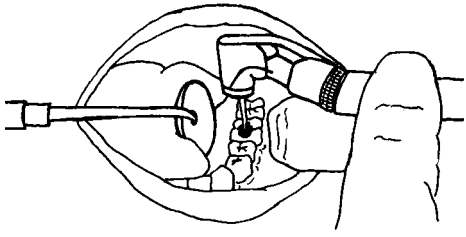
* Some simple but strong portable equipment has been made for use in remote areas by the National School of Dental Therapy, 710 15th Ave. E., Prince Albert, Saskatchewan S6V 7A4, Canada. E-mail: sahenakew@firstnationsuniversity.ca. Website: www.firstnationsuniversity.ca.

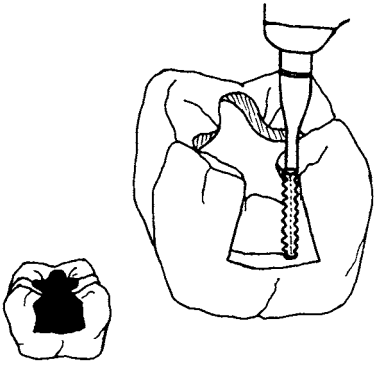
How a Dental Drill Works



Even if you have the equipment, **it is essential that you learn how to make permanent fillings from a person who has experience using a dental drill.**

The tip of the drill (drill bit) is sharp. The ones powered by compressed air move at high speed, which makes it easier to dig out all of the decay and shape the hole. Some drills spray water on the tooth to keep it cool. Cooling is especially important with a slower treadle-powered drill. An assistant can spray water on the tooth if the drill does not have a sprayer.

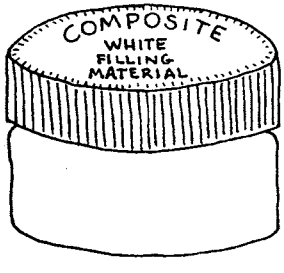




As the drill bit moves slowly back and forth, it opens the cavity further. This makes it easier to see all of the decay. The decay is later removed with a spoon instrument (page145).

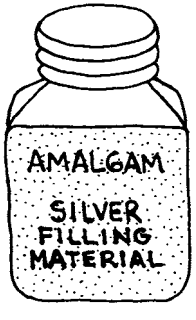
The drill bit also changes the shape of the cavity. The hole in the tooth is shaped so that it will keep the permanent filling material in place.

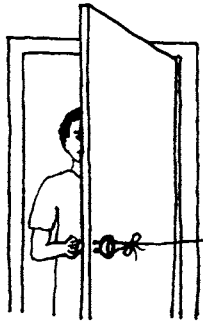
When all of the decay is removed, the dental worker will place a paste containing calcium hydroxide into the deepest part of the cavity. This paste helps to separate the final filling from the nerve, so the filling will not cause pain.



The filling material, which is made of metal or plastic, must be very strong. It must not break apart when the person chews food or when saliva washes over it.

Unfortunately, the best kinds of filling material often require special instruments to prepare and place them in the cavity.





CHAPTER **11**

Taking Out a Tooth

Not every painful tooth needs to come out. You must decide how serious the problem is, and then decide if you can treat and save the tooth. Some problems—such as root canal treatment for a tooth with an abscess, or wiring for a loose tooth—require the skills of an experienced dental worker. Even if you cannot treat every person, a more experienced worker can help you by taking care of the more difficult tooth problems.

Remove a tooth only when it is necessary. Here are three reasons to take out a tooth:

- **It hurts** all the time or hurts enough to wake the person at night.
- **It is loose and hurts when you move it.**
- **It has a broken root** (p. 96) or a **broken top with an exposed nerve.**

It is important to learn from another person, not just from a book. **Find an experienced dental worker who can show you how to take out a tooth and who can then watch you as you try it yourself.**

Before You Begin: Ask Questions!

Before you take out a tooth, you need to learn about the person's health. Tell the person what to expect, and then ask:

- Do you bleed a lot when your skin is cut? (If so, you may bleed a lot when your tooth comes out.)
- Do you have swollen feet and difficulty breathing? (You may have heart disease.)
- Do you have any allergies? (You may be allergic to some medicines we give when we take out a tooth.)
- Are you a diabetic? (If you have diabetes, your wound will take a long time to heal.)
- Are you pregnant? (Some problems can be treated during pregnancy, but sometimes it is better to wait. See pages 15–16, 77, 102, and 154.)

If the person answers "yes" to any of these questions, you must take special precautions. See the next page.

FIVE PROBLEMS TO WATCH FOR

A person who bleeds a lot must know how to prevent bleeding afterward. Explain very carefully the steps given on page 161. You may also want to place a suture (page 161) to hold the gums tightly together.

Persons with heart disease often take aspirin or medicines called **anticoagulants** that do not allow the blood to clot normally. Ask what medicine the person takes. Heparin, Coumadin, and Warfarin are examples of anticoagulants. Another heart medicine, digitalis, is not an anticoagulant. If the medicine is not an anticoagulant, you can take out the tooth. **But do not use more than 2 cartridges of local anesthetic.** The epinephrine inside the anesthetic can harm a weak heart. (See page 137, #2).

A person with allergies may be allergic to aspirin, penicillin, erythromycin, or other medicines you often use. Find out which medicine has caused problems and give a different medicine, one that will not cause a reaction.

A diabetic's wound may become infected. Watch carefully the place where you took out the tooth and give antibiotics (page 94) if an infection begins.

During the last month of pregnancy, a woman may be too uncomfortable to have a tooth taken out. Control the infection with a 5-day course of penicillin (page 94), and take out the tooth after the baby is born. It is also better to wait if the woman has high blood pressure, because she may bleed too much when you take out the tooth. For more information about treating pregnant women, see page 77, and the story on pages 15 to 16.

Be Patient, Careful, and Considerate

- Inject local anesthetic slowly in the right place, so the tooth becomes numb and you do not hurt the person when you remove it. If the person says the tooth still hurts, it is probably true! Inject again.
- Use the correct instrument in the correct way. If you are careful you can avoid breaking the tooth. When you take out a baby tooth, be extra careful not to hurt the new tooth growing under it.
- Explain everything to the person. Tell the person if something is going to hurt, even a little. When you take out the tooth, you can explain, for example, that there will be a feeling of pressure. Press on the person's arm to demonstrate what it will be like. When you finish taking out the tooth, explain what you have done and what the person can do at home to help the mouth heal.

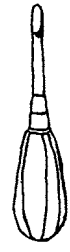
THE INSTRUMENTS YOU NEED

Buying instruments can be confusing, because there are so many. Only a few of them are really necessary. You can take out most teeth with the 4 basic instruments on page 155.

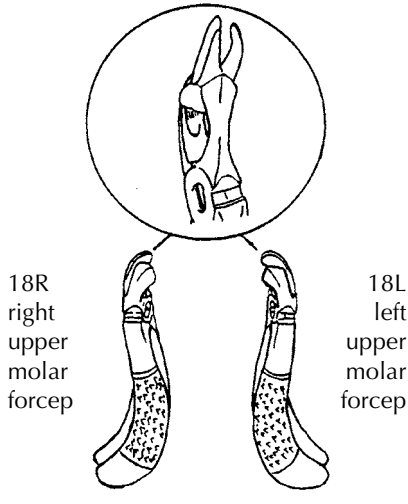
When you order, use the proper name. Many companies use numbers to describe the instruments, but a different company may use a different number. If you use the proper name along with the number given here, most companies will understand what you want. (See page 207.)

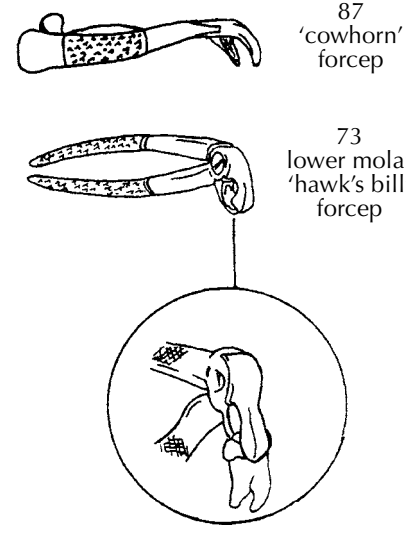
The Four Basic Instruments

You can take out most teeth with these 4 instruments:

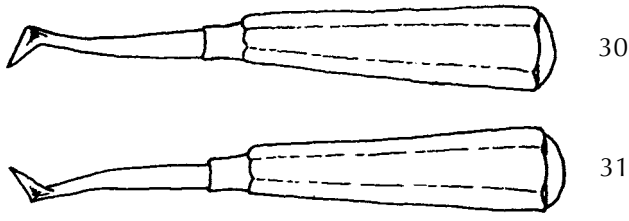
A spoon or probe…	**… an elevator…**	**… and two forceps**
		 150 upper universal forcep 151 lower universal forcep
Use this to separate the gum from the tooth.	**An elevator will loosen a tooth, or lift out a broken root.**	**Use forceps to pull out the tooth. There is one for upper teeth and one for lower teeth.**

Other forceps can be useful, especially for taking out a strong back tooth. They have pointed beaks that are made to fit between the roots of a back molar. As a result, you can hold onto the larger tooth better.





Curved elevators are good for taking out broken roots. You can force their pointed ends more easily between the root and the bone that is holding it.



Cryers elevators

Unfortunately, forceps and elevators are expensive. If you want to order more than the 4 basic instruments (page 155), remember the cost.

WHERE YOU WORK IS IMPORTANT

Work wherever it is light and bright. You must be able to see what needs to be done. Sunlight or light from a lamp is usually enough. Use a dental mirror (page 145) to direct more light into the mouth.

Use a chair that has a back high enough to support the person's head.

Think about how you can stand and work the most easily.

To take out a lower tooth, you need to push down and then pull up.

So the person should be sitting down low.

If you stand on a box, he will be lower.

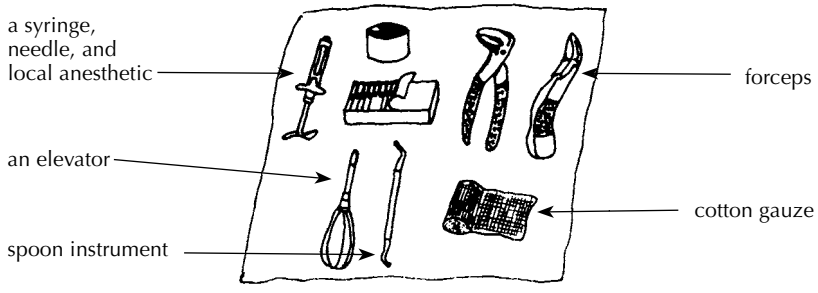
To take out an upper tooth, you need to push up and then pull down.

So the person should be sitting up high.

If he sits on cushions, he will be higher.

HOW TO TAKE OUT THE TOOTH

Once you are certain which tooth must come out, decide which instruments you will need. Lay them out ahead of time on a clean cloth:



Before you touch your instruments, be sure your hands are clean. Wash with soap and water, and put on clean plastic or rubber gloves. See pages 85 and 86.

Be sure, also, that your instruments are clean. See pages 87 to 90. **Prevent infection—keep clean!**

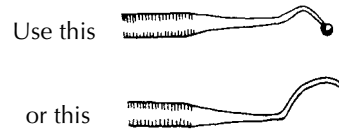
To take out a tooth, follow these 8 steps (pages 157–164):

1. Explain what you are going to do.
2. Inject local anesthetic.
3. Separate the gum from the tooth.
4. Loosen the tooth.
5. Take out the tooth.
6. Stop the bleeding.
7. Explain to the person what to do at home to look after the wound.
8. Help the person to replace the tooth with a false tooth.

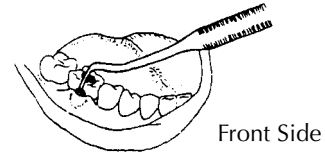
1. **Always begin by talking to the person.** Explain why you must take out a tooth (or teeth) and tell how many teeth you will take out. Begin working only when the person understands and agrees.
2. **Inject some local anesthetic slowly, in the right place.** Remember from Chapter 9 that the injection for a lower tooth is different from the injection for an upper tooth.

   Wait 5 minutes for the anesthetic to work, and then test to be sure the tooth is numb. Be kind—always test before you start. If the person still feels pain, give another injection.

3. **Separate the gum from the tooth.**
The gum is attached to the tooth inside the gum pocket. Separate the gum and tooth before you take out the tooth. If you do not, the gum may tear when the tooth comes out. Torn gums bleed more and take longer to heal.

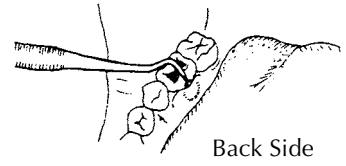


Slide the end of the instrument along the side of the tooth into the gum pocket. At the deepest part of the pocket, you can feel the place where the gum attaches to the tooth.



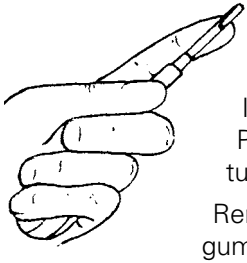
Push the instrument between this attached part and the tooth. Then separate the tooth from the gum by moving the instrument back and forth.

Do this on both the cheek side (outside) and the tongue side (inside) of the tooth.



The attached gum is strong, but it is also thin. Control your instrument carefully so that it only cuts through the part that is attached to the tooth. Do not go any deeper.

4. **Loosen the tooth.** A loose tooth is less likely to break when you take it out. Before you take out a strong tooth, always loosen it first with a straight elevator.



Caution: if you do not use it properly, a straight elevator can cause more harm than good.

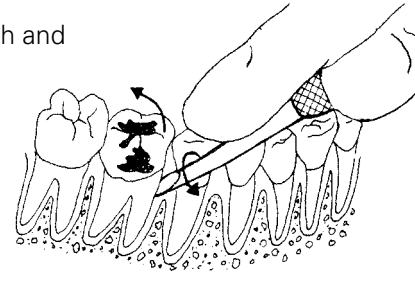
It is important to hold a straight elevator properly. Place your first finger against the next tooth while you turn the handle. This will control it.

Remember that the sharp blade can slip and hurt the gums or tongue.

The blade goes between the bad tooth and the good one in front of it. Put the curved face of the blade against the tooth you are removing.

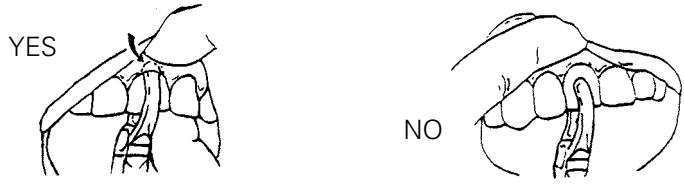
Slide the blade down the side of the tooth, as far as possible under the gum.

Turn the handle so that the blade moves the top of the bad tooth backward.



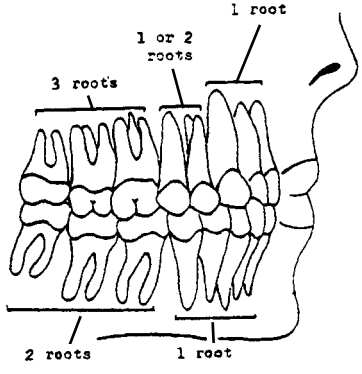
Put pressure on the bone, not the tooth beside it. Do not loosen the good tooth!

5. Now, take out the tooth. Push your forceps as far up the tooth as possible. The beaks of the forceps must hold onto the root under the gum.



Use your other hand to support the bone around the tooth. Your fingers will feel the bone expanding a little at a time as the tooth comes free. With practice, you will be able to decide how much movement the tooth can take without breaking.

To decide which way to move a tooth, think about how many roots it has.



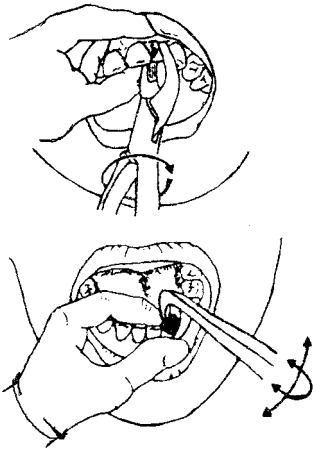
If a tooth has **1 root,** you can turn it.

If a tooth has **2 or 3 roots,** you need to tip it back and forth.

Take your time. If you hurry and squeeze your forceps too tightly, you can break a tooth.

Removing a tooth is like pulling a post out of the ground. When you move it back and forth a little more each time, it soon becomes loose enough to come out.

Front teeth come straight out

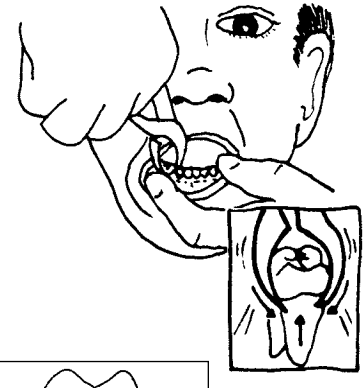


Back teeth usually come out toward the cheek

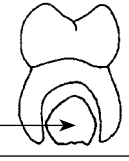
When you remove lower molars with the lower molar 'cow-horn' forcep, you use it in a different way:

- Fit the points under the gum, between the tooth's roots.
- Squeeze the handles gently and move them up and down, then side to side. This will force the points of the forcep further between the roots and lift the tooth up and out.

NOTE: some lower molars come out toward the tongue.

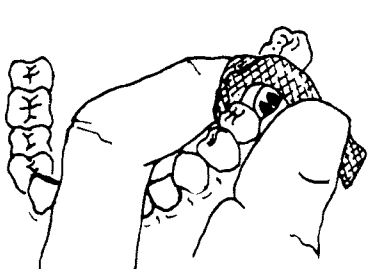


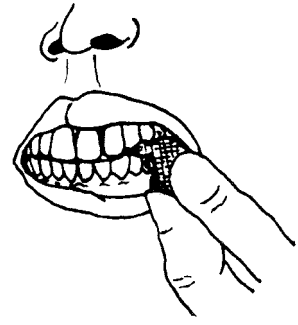
WARNING: **Do not use the 'cowhorn' forcep to take out a baby molar.** Its points can damage the permanent tooth growing under it.



When the tooth comes out, look carefully at its roots to see if you have broken any part off and left it behind. **Whenever possible, take out broken roots so that they do not cause infection later inside the bone.**

6. **Stop the bleeding.** Squeeze the sides of the **socket** (the hole that is left after you take out the tooth) back into place. Then cover the socket with cotton gauze and ask the person to bite firmly against it for 30 minutes. A child should bite firmly on the gauze for 2 hours. See page 142.





Whenever the gums are loose, join them together. To stop the bleeding and heal the wound, you must hold the gums tightly against the bone under them.

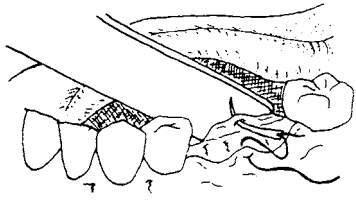
HOW TO PLACE A SUTURE

When you remove 2 or more teeth in a row, it is a good idea to join the gums with a **suture** (needle and thread). If you need more than one suture, place the first one nearest the front of the mouth and work toward the back.

The needle and thread you use must be sterile. Boil both for 30 minutes. See page 88.

You will need an instrument to hold the needle firmly (hemostat) and scissors to cut the thread.

a) Pass the needle through the loose gum—the one you can move most easily. Then pass it through the more firmly attached gum.

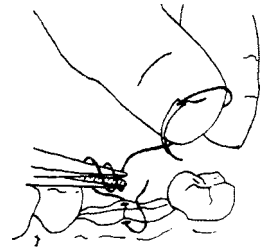


If the looser gum is on the outside, you will bring the needle toward the tongue. Protect the tongue with a tongue blade or your dental mirror.

You must suture both the upper and the lower gums in this way.

After this you must tie 2 knots and cut the thread. See the next page.

b) Pull the thread until about 4 cm of thread is left loose on the starting side.

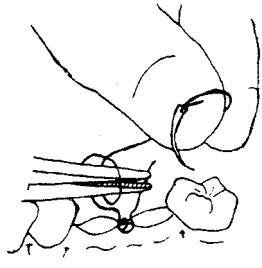


Wrap the longer end of thread **2 times** around the beaks of the needle holder.

Then grab the shorter free end of the thread with the tip of the needle holder. With the needle in your fingers, pull the needle holder in the opposite direction. The thread will slide off the beaks and form the first knot.

Tighten the knot onto the side of the wound, not on top of it.

c) Tie a second knot, to keep the first one tight.



Wrap the thread **once** around the beaks of the needle holder.

Grab the free end with the tip of the needle holder as you did before. Pull the 2 ends in opposite directions. The second knot will form over the first knot.

d) Cut the threads so that about .5 cm is left free. If the ends are too long, they will bother the person's tongue. If they are too short, the knot may come open.

Then cover the area with cotton gauze.
Tell the person to:

- bite against the cotton for 1 hour to stop the bleeding, and
- return in 1 week for you to remove the thread.

There is a special kind of suture material that disappears by itself, which is good to use because the person does not have to return for you to remove sutures. Unfortunately, it is expensive. If you cannot afford it, use sewing thread and remove it 1 week later.

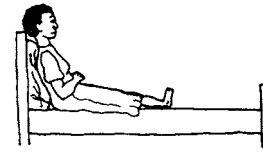
7. **Explain to the person what you have done, and what to do at home to look after the wound.** Remember that her mouth is numb, so she cannot feel what is happening.

   Taking out a tooth is like a small operation. There will be bleeding and later some pain and swelling. This is normal and should be expected. Tell the person this. Then **give the following advice:**

   - **Bite firmly on cotton gauze** for an hour, and again later if blood comes from the socket.

Always give the person some extra cotton gauze to carry home, in case bleeding starts again later. Show her how to use the cotton gauze.

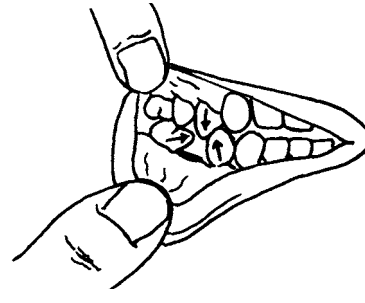
   - **Take aspirin or acetominophen for pain** as soon as you need it, and then every 3 or 4 hours. See page 94.
   - **Keep your head up when you rest.** This reduces bleeding because it is harder for blood to flow uphill. It also hurts less.



   - **Do not rinse your mouth.** In some places people believe they should immediately rinse with salt water and spit a lot after a tooth comes out, but this is harmful! It is important for the blood clot to stay inside the socket and not wash away.
   - **Do not drink hot liquids** like tea or coffee, because they encourage bleeding. However, cool liquids are good for you. Drink a lot of water.
   - **Continue to eat,** but be sure the food is soft and easy to chew. Try to chew food on the side opposite the wound.
   - **Keep your mouth clean.** Start on the second day and continue until the socket is well. To do this, rinse your mouth with warm salt water (page 7) and keep your teeth clean (pages 69–72), especially the teeth near the socket.

FALSE TEETH

After a tooth comes out, it is a good idea to replace it with a false tooth. If you do not, the other teeth soon starts to shift into the open space.



This weakens the bone around their roots. After some years, they too become loose and sore, and they have to be taken out.

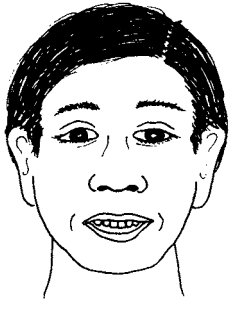
WHY FALSE TEETH ARE HELPFUL

When you take out a tooth, it is like removing a brick from the center of a wall. The area around the space becomes weaker and begins to crumble.

To prevent this, a plastic tooth can fit into the space. This tooth is not for chewing food but to hold the remaining teeth in their normal, healthy position.

A full set of teeth allows a person to chew the foods needed to stay healthy and feel good. Moreover, teeth help you look good!

A person without many teeth looks old.



With a new set of plastic 'false teeth', the same person looks and feels much younger.

If possible, after you take out a tooth, encourage the person to replace the tooth with a plastic tooth. Find out where they are made and how much they cost. Then explain:

- how to clean the remaining teeth to prevent them from going bad (pages 69–72), and
- how it is possible to get a replacement plastic tooth.

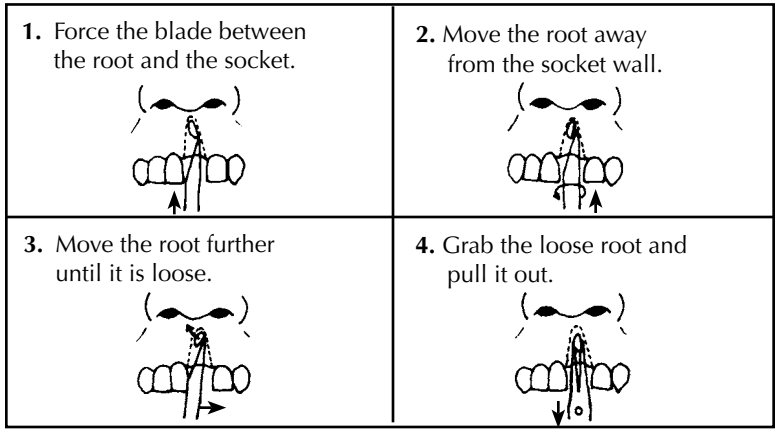
PROBLEMS THAT CAN OCCUR

Sometimes a problem develops even though you have tried to be careful. Give help whenever you can. **If you are not able to help, refer the person to a doctor or dentist as soon as possible.**

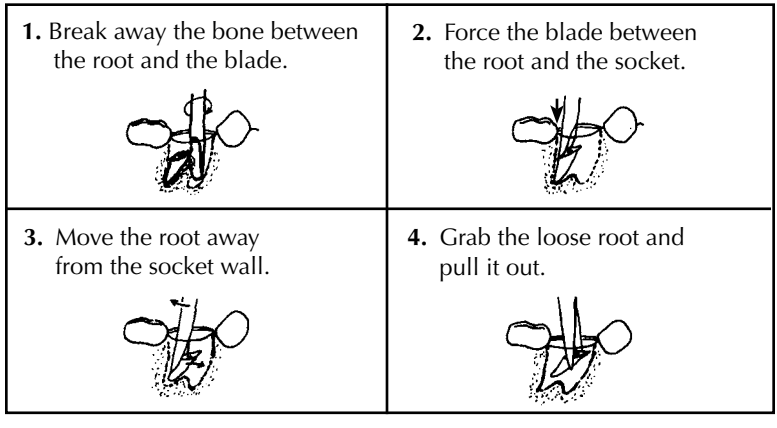
BROKEN ROOTS

If you can see the root, try to remove it. If you leave a broken root inside the bone, it can start an infection.

Removing a broken UPPER root. Use your straight elevator. Slide the blade along the wall of the socket until it meets the broken root.


1. Force the blade between the root and the socket.
2. Move the root away from the socket wall.
3. Move the root further until it is loose.
4. Grab the loose root and pull it out.

Removing a broken LOWER root. Use a straight elevator (or a curved elevator if you have one). If the broken root is from a molar tooth, slide the blade into the socket beside the broken root.


1. Break away the bone between the root and the blade.
2. Force the blade between the root and the socket.
3. Move the root away from the socket wall.
4. Grab the loose root and pull it out.

WARNING: **It is better to leave a small broken root inside the socket.** In a week or so, it will loosen itself and be easier to remove.

ROOT PUSHED INTO THE SINUS

An upper root that seems to disappear may have gone into the sinus (page 95). **Do not try to find it.** Instead, cover the socket with cotton gauze and send the person to the hospital. A special operation is needed to open the sinus, find the root, and take it out.

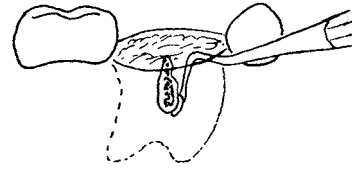
Ask the person not to blow his nose. That forces air through the opening and prevents it from healing.

BONE CHIPS AND TAGS OF FLESH

Small pieces of bone that lie loose inside the socket can cause bleeding and delay healing.

Gently reach into the socket with the end of an elevator or spoon instrument. Feel for the piece of bone and carefully lift it out.

Give local anesthetic if needed.



When you are finished, ask the person to bite on cotton gauze until the bleeding stops.

Small tags of flesh are not serious, but they bother the person. Hold the tag steady with cotton tweezers and use sterile scissors carefully to cut the bit of flesh free.

Rinsing with warm water makes gums tough and helps them heal. But do not rinse for the first 24 hours. See page 163.

BLEEDING

If the first cotton gauze (page 161) does not stop the bleeding in the socket, place more cotton gauze. Wait 5 minutes to see if the bleeding stops. If this does not work, follow the steps on pages 161–162 for placing a suture.

SWELLING

Hold a cloth wet with **cold** water against the face. This helps to **prevent** swelling. This is a good thing to do if the tooth was hard to take out, or if it took a long time.

If there already is swelling, **heat** against the face will help to **reduce** swelling. Hold a cloth wet with hot water against the swollen area, 30 minutes on and 30 minutes off. **Be careful not to burn the skin!**

A large swelling usually means there is an infection. The person needs additional treatment. See page 116.

PAINFUL SOCKET

The socket area often hurts for a day or so after the tooth has been removed. Aspirin or acetominophen (page 94) is usually enough to relieve the pain.

A strong, steady pain that lasts for several days is a sign that the person is having a problem called dry socket. The treatment for this special kind of problem is given on page 117.

DISLOCATED JAW

When you press against a person's jaw while taking out a tooth you can sometimes dislocate it. The jaw has been pushed out of position and it is not able to go back again.

We describe the care for a dislocated jaw on page 113.

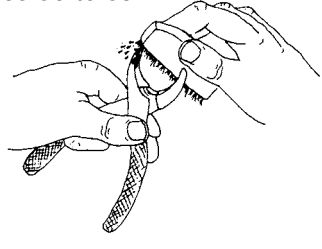
MOST IMPORTANT: Be sure to tell each person you treat, "If your problem gets worse, you can come back to see me immediately!"

CLEAN YOUR INSTRUMENTS AFTER YOU FINISH

If your instruments are dirty, they can pass on germs that cause tetanus (page 118) or hepatitis (see page 172 in *Where There is No Doctor).*

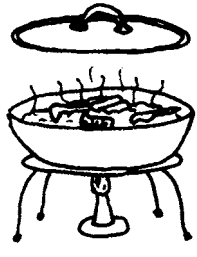
Germs on dirty instruments can also go into the socket and start an infection.

Dental instruments must be not only clean, but also sterile. This means they need to be both scrubbed and then boiled before they can be used again. See pages 86 to 89.



Use a brush and clean each instrument with soap and water.

Be careful to scrub away all bits of old dried blood.

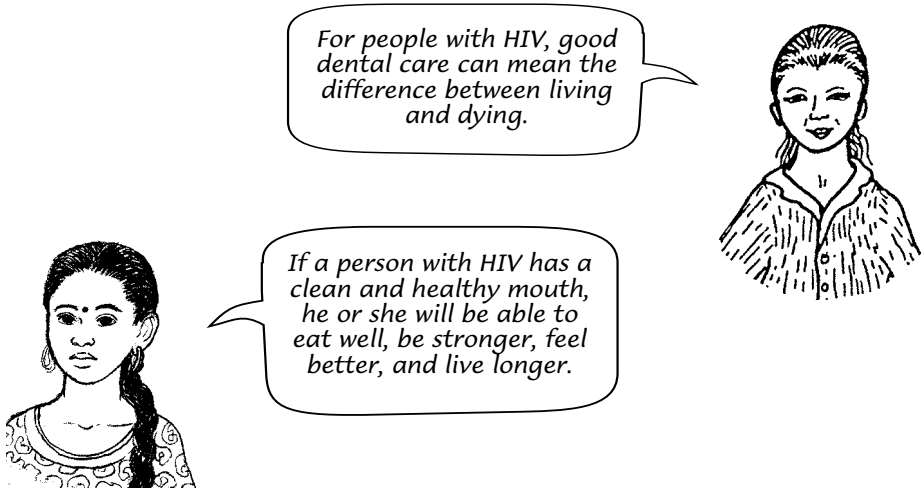


Then kill the germs by placing the instruments into a covered pot of boiling water for 30 minutes.

CHAPTER 12

HIV and Care of the Teeth and Gums

Many things in the world have changed since *Where There Is No Dentist* was first published in 1983. One of the most profound changes has been the spread of HIV and AIDS worldwide. Although millions of people are now infected with HIV, the illness is still surrounded by fear and disinformation. This chapter explains HIV and AIDS, what they mean for people who are infected and for oral health workers, and how we can all work together to prevent the spread of HIV.


For people with HIV, good dental care can mean the difference between living and dying.
If a person with HIV has a clean and healthy mouth, he or she will be able to eat well, be stronger, feel better, and live longer.

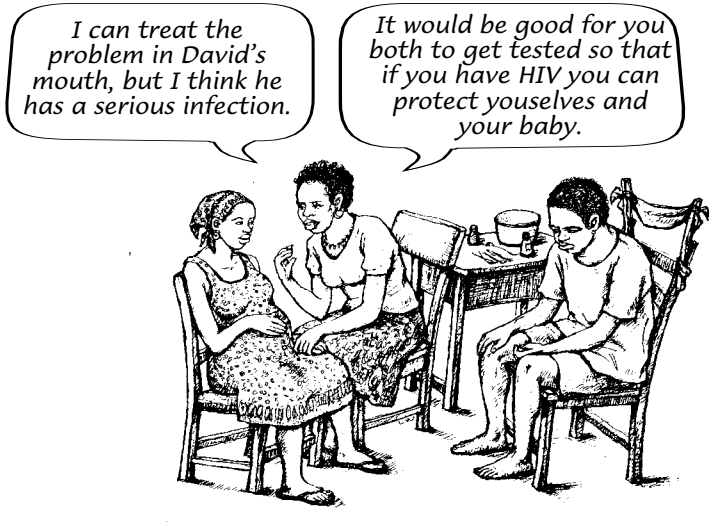
Mary and David

Mary was 17 years old. She and her boyfriend David were expecting a baby. David was Mary's first boyfriend and he was very attentive and kind to her. But David had not been well lately. His mouth had been very sore and smelled bad all the time. Although he did not seem to have problems with his teeth, it was hard to chew or swallow, and white spots appeared on the roof of his mouth. Mary thought he should go to see the dental worker at the health center. At first David refused. He said he did not want to talk about it in a nervous voice. Finally David agreed to go if Mary would go too.

David said he wanted to see the dental worker by himself. So Mary sat in the waiting room while David saw the dental worker.

After a while the dental worker came out and asked Mary to come into the room. David was sitting on a chair looking worried. He tried to give Mary a smile, but she could see his heart was not in it. The dental worker asked David if she could tell Mary what she had found in David's mouth. David agreed, so the dental worker explained to Mary that David did not have any problems with his teeth. He had infections in his mouth, gums, and throat. This was why his mouth was sore and smelled bad all the time.

The dental worker said she would give David the dental care he needed. But she also said she thought David's problem might be caused by a much more serious infection called HIV. That would explain why his body is weak and he is unable to fight off the infection in his mouth. But to be sure, David should get a blood test for HIV. And because HIV can be passed from one person to another she encouraged Mary to get tested too. She explained that the sooner you find out if you have HIV, the sooner you can start taking medicines that help you and your baby live long and healthy lives.


I can treat the problem in David's mouth, but I think he has a serious infection.
It would be good for you both to get tested so that if you have HIV you can protect youselves and your baby.

The right information will help dental workers give good dental care to everyone.

This story shows why it is important for dental workers to know about infections in the mouth that may be caused or made worse by HIV. With correct and up-to-date information, dental workers can give the good dental care everyone deserves, and can help prevent HIV from spreading to other people or to themselves.

Health and dental workers must give people with HIV the care they need. Make sure your health system provides the resources (equipment, medicines) you need to give good care.

WHAT ARE HIV AND AIDS?

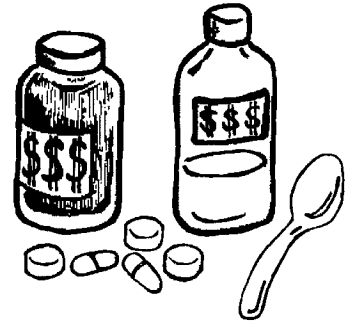
HIV (**H**uman **I**mmunodeficiency **V**irus) is a germ that causes **AIDS** (**A**cquired **I**mmune **D**eficiency **S**yndrome) by weakening the immune system, the part of the body that fights off infection and disease.

A person is said to have AIDS when he or she starts to get many common health problems more often than usual and stays sick longer. Some of these problems are losing weight, sores that will not heal, a bad cough, sweating at night, diarrhea, skin rashes, a fever, or feeling very tired all the time.

Without treatment the immune system of a person with AIDS gets weaker and weaker and the person is less able to fight these health problems. Most people with AIDS die from diseases their bodies are no longer strong enough to fight.

Many people who are infected with HIV do not get sick for several years. This means that a person can be infected with HIV and not know they have it because they feel healthy. But HIV can be passed from one person to another as soon as a person is infected. So, the only way to know if you are infected is to take a blood test called an HIV test. This test can be done at many clinics, hospitals, and other locations.

Medicines called anti-retrovirals, or ARVs, can help people with HIV regain their health or stay healthy for many years. ARVs can also help prevent the spread of HIV to a baby or to people who are exposed accidentally. ARVs cannot cure HIV, however. So these medicines must be taken every day, for life.

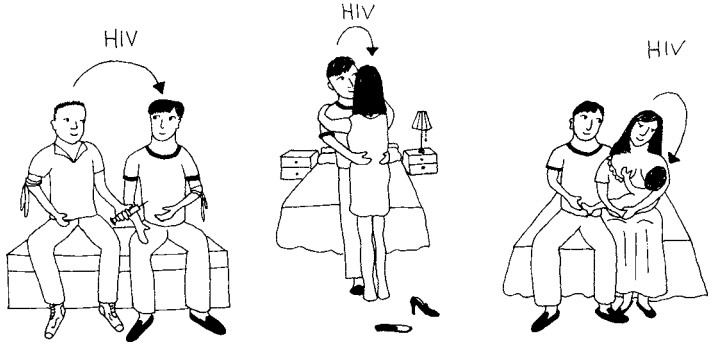


Medicines for HIV are expensive, though people affected by HIV have organized to make them available in more countries and at lower prices. Many governments and organizations provide ARVs for free either through their own funding or with the support of international donors. Talk to a health worker who has experience working with HIV to find out where to go for treatment for HIV.

HOW IS HIV SPREAD?

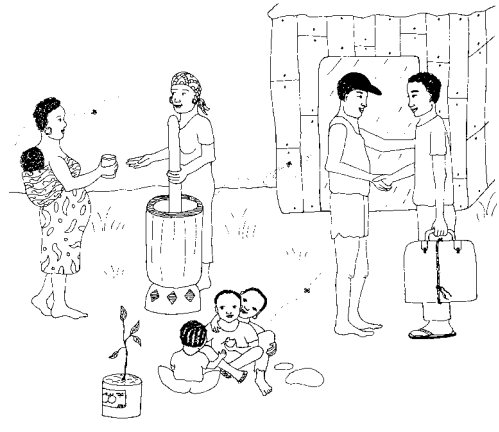
HIV lives in certain body fluids, such as blood, semen (sperm), and the fluids in the vagina. The virus is spread when these fluids get into the body of another person. This means that HIV can be spread by:

- having unsafe or risky sex with someone who has the virus (see page 192).
- using injection needles or syringes that have not been sterilized (see page 87).
- using dirty instruments that cut the skin for injecting drugs, scarring, piercing, circumcision, or dental care. Even if instruments have been washed and look very clean, they can still have germs on them and can spread HIV if they have not been sterilized (see page 87).



- touching or receiving the blood of an infected person.
- mother to child during pregnancy, birth, or breastfeeding.
- splashing of blood into the eyes or mouth.

HIV does not live outside the human body for more than a few minutes. It cannot live on its own in the air or in water. This means **you cannot give or get HIV from everyday contact**, such as play, working with someone, shaking hands, sharing meals, or from spitting, sneezing, coughing, sweating, from tears, or from insect bites.



HIV is not spread by casual contact.

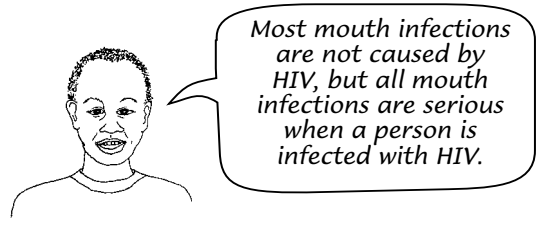
WHO GETS HIV?

Millions of people all over the world are infected with HIV. If the body is strong, the HIV virus can grow quietly for several years, slowly weakening the immune system before it turns into AIDS. If the body is weak, the diseases of AIDS may develop more quickly.

Both rich and poor people can be infected with HIV, but the sickness is worse for the poor. This is because poor people get more infections, which weaken the body, because they do not have access to:

- low-cost health care.
- clean, safe drinking water.
- good sanitation.
- enough nutritious food.
- safe, uncrowded living conditions.

Working to change these conditions is an important part of preventing the spread of HIV and improving the lives of people who have HIV.



HOW HIV AFFECTS THE MOUTH

People with HIV are likely to have more problems inside the mouth than people who do not have HIV. Because their bodies are weaker, any sores and infections may spread more quickly than they do for healthier people. So people with HIV may need more regular and careful help from dental workers than other people in the community.

Most people with HIV will get at least one kind of infection or problem in the mouth at some time during their illness. If this is not treated, it can be painful, can affect how much food the person eats, and can cause more serious health problems.

Infections in the mouth related to HIV affect the soft skin (tissue)—the lips, the cheeks, the tongue, the lining of the roof of the mouth, under the tongue, and the skin around the teeth (the gums). HIV does not directly affect the teeth themselves. In the final stages of AIDS, the gums and the jaw bone, which hold the teeth in place, may be destroyed. Also, HIV can cause "dry mouth," especially for people using ARVs (anti-retroviral drugs), which makes it easier to get cavities (tooth decay).

HOW TO EXAMINE THE MOUTH FOR SIGNS OF HIV OR AIDS

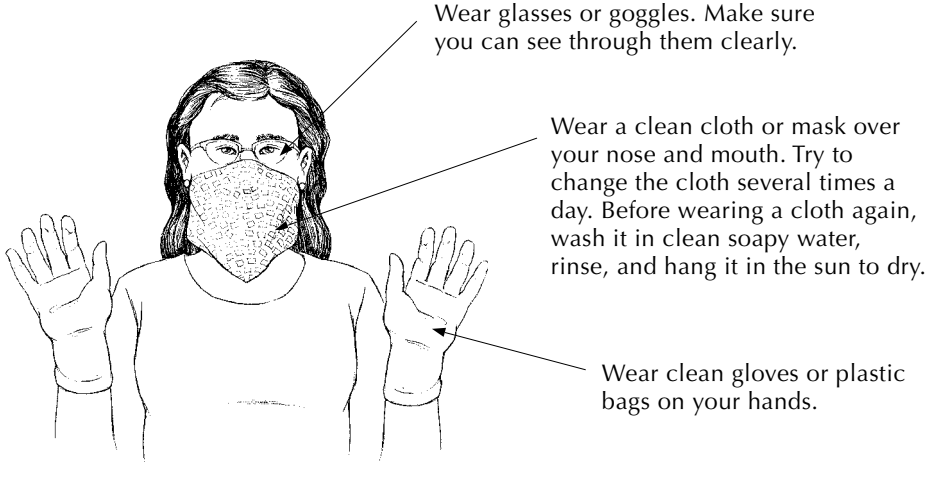
IMPORTANT: **You cannot tell from looking at a person if he or she has HIV.**

Dental workers must always be careful to make sure they do not pass the virus from one person to another during dental care.

Also, dental workers must protect themselves to make sure the virus does not pass to them from someone they are treating. So **always use precautions against HIV infection with every person you see.**

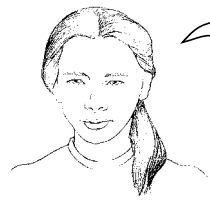
The best precautions are to always wear clean latex gloves or plastic bags on the hands, a face mask, eye protection, and to use only clean, sterile instruments. For information on how to clean and sterilize instruments, see pages 86 to 91.

WHEN YOU EXAMINE SOMEONE, ALWAYS TRY TO:


Wear glasses or goggles. Make sure you can see through them clearly.
Wear a clean cloth or mask over your nose and mouth. Try to change the cloth several times a day. Before wearing a cloth again, wash it in clean soapy water, rinse, and hang it in the sun to dry.
Wear clean gloves or plastic bags on your hands.

If possible, dental workers should always be protected so they can prevent HIV from passing to themselves, the people they are treating, their families, and their sexual partners.

Always examine the lips, face, and inside the mouth of someone who wants advice about a dental problem. Look for any swelling, broken skin, sores, redness, infection, or unusual color changes. For information about the most common problems caused by HIV, see page 178.

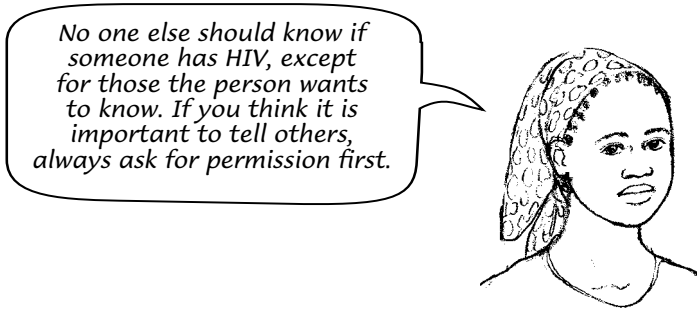


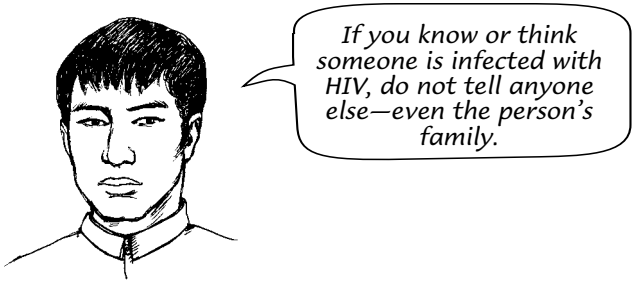
Look carefully inside the cheeks and lips. Ask the person to lift up her tongue so you can look underneath it. Also, ask her to stick her tongue out. Wrap a small piece of clean cloth around the tip of the tongue and gently pull it forward so that you can see the sides of the tongue, the back part of the mouth and tongue, and as far down the throat as possible. For more information on how to examine the mouth and teeth, see Chapter 6, pages 74 to 83.

It is important to ask about the person's general health too. There may be other signs of HIV such as fevers, night sweats, feeling very tired all the time, weight loss, or diarrhea. Many people with HIV also become ill with tuberculosis or cancers. If the person has any of these problems, make sure he or she goes to see a health worker or doctor who is experienced with HIV.

Feel along the jaw, underneath the jaw bone, and on the upper neck to see if there are any lumps or pain.

Always tell the person what treatment you would like to give. After your examination, explain what you found and what can be done to help or prevent it from getting worse. Always ask the person for permission before you do any treatment, just as you should for any person you see.


No one else should know if someone has HIV, except for those the person wants to know. If you think it is important to tell others, always ask for permission first.



Respect the privacy of a person with HIV as you would anyone who comes to you for dental care.
(See page 192, "Treat everyone with respect.")

DENTAL CARE FOR A PERSON WITH HIV

In general, there is no need to change dental treatment because a person is infected with HIV. This is especially true if the person has no signs of HIV. If there is already an infection in the mouth, use a mouth wash before treatment (see the "General Treatment" box on pages 178 and 179). This will help prevent the infection from getting worse.

There are no special problems in doing simple fillings, or fitting false teeth (dentures) for a person infected with HIV. But as the HIV infection advances to AIDS, you will be able to give better dental care if you know about any health problems the person may have. For example, if you need to take out a tooth, you must be extra careful not to cause an infection (see page pages 85 to 90). Remember, always use clean, sterilized instruments, and when you give injections use only clean, sterilized needles and syringes, or disposables, so you do not cause infections. If you have any concerns about someone's health, it may help to speak with a health worker.

Taking out a Tooth

To take out a tooth, follow all the guidelines in Chapter 11, page 157. In addition, to prevent infection for someone with HIV, before you remove the tooth, make sure the person's mouth is as clean as possible. A mouth rinse can help (see the "General Treatment" box on pages 178 and 179).

To prevent infection and to help with healing, gently scale or scrape away the tartar (see page 127) from all the teeth. Be careful to do as little damage as possible to the gum and bone around the tooth you are taking out. An infected tooth socket (the hole that is left after you take out the tooth) in a person with HIV can be a serious problem. For problems after you take out a tooth, see pages 165 to 167.

In the later stages of HIV infection when the person has AIDS, the blood may not clot as quickly as normal. Be very gentle when you take out the teeth. Take only one tooth out at a time, and wait until bleeding is controlled before taking another one out.

COMMON PROBLEMS CAUSED BY HIV AND HOW TO TREAT THEM

There are many infections that occur in the mouth, such as a cold sore or gum infection. Most of these infections are not caused by HIV and do not usually cause serious problems. But all infections are serious when a person has been infected with HIV because the virus makes the person's body weak and unable to fight off infection. Smoking or chewing tobacco can also make problems in the mouth worse. Many infections for people with HIV, including mouth infections, can be prevented by taking 480 mg of cotrimoxazole 2 times a day with lots of water.

The main problems in the mouth for persons with HIV are:

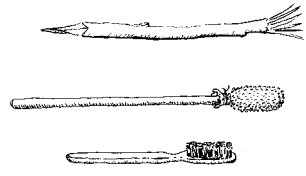
1. white or yellow patches
2. open sores
3. gum infections
4. cold sores or blisters
5. dark-colored skin patches
6. dry or painful mouth and throat

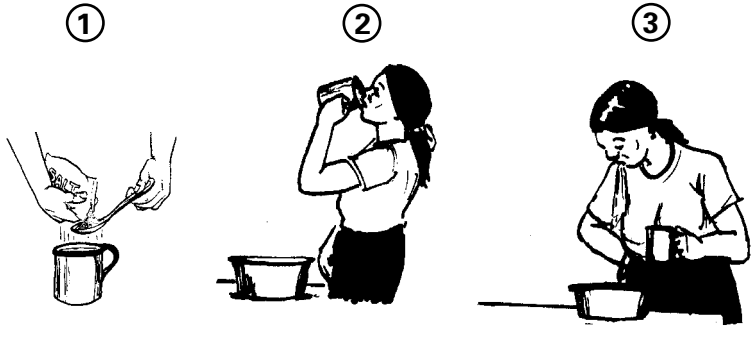
General treatment

Always remove false or plastic teeth (dentures) before using any of these treatments.

Most of the problems in this chapter can be helped:

- if the teeth are kept clean by brushing or using a chewing stick every day, including false or plastic teeth.
- by rinsing the mouth several times a day with a simple mouth wash made with salt and clean water (see page 7).



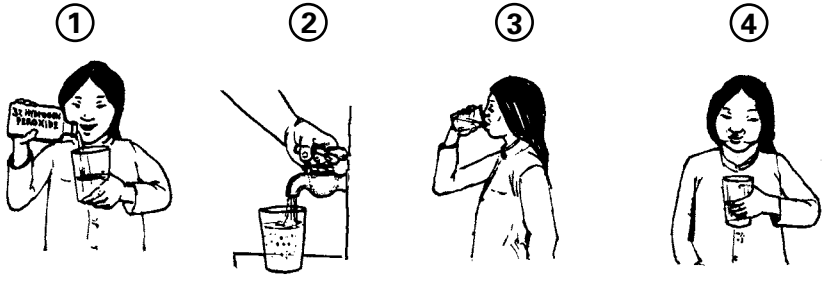


- by gently cleaning any infection or sores with a clean cloth that has been moistened with salt water.
- by gently wiping inside the mouth (teeth, gums, all the soft inside skin) with a clean cloth.

Be careful if you use a chewing stick. Some wood is very hard and can hurt and damage the gums. The soft wood from the neem tree (which grows in many tropical countries) works well. You can also wrap clean cloth around the pointed end of a small stick or tooth pick and use it to carefully clean the teeth one at a time.

OTHER TREATMENTS THAT CAN HELP ARE:

- *chlorhexidine gluconate, 0.2%*—a mouth wash that has no alcohol in it. Hold some in the mouth for 1 minute, 2 times a day. Make sure it covers the whole mouth inside, and then spit it out. This mouth wash reacts badly with some kinds of toothpaste. So wait 30 minutes between using this mouth wash and brushing your teeth.
- *gentian violet, 0.5%*—a purple-colored liquid that kills germs. Paint it onto the parts of the mouth that are infected. Sometimes it may be necessary to paint the whole inside of the mouth. Try not to swallow any.
- *povidone iodine, 1%*—a brown-colored liquid that kills germs. Hold some in the mouth for 1 minute, 2 times a day. Make sure it covers the whole mouth inside, and then spit it out (do not swallow any). Do not use for more than 14 days. Do not use if you are pregnant or breast feeding.
- *hydrogen peroxide, 3% and clean water*—(see page 8).

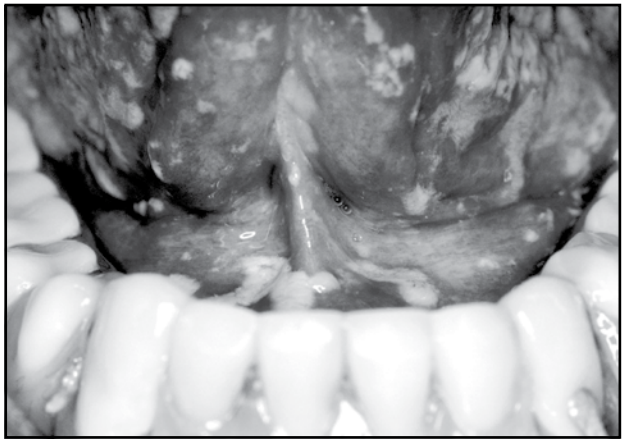


Mix hydrogen peroxide evenly with water—that is ½ cup of hydrogen peroxide with ½ cup of water.

Hold some in the mouth for about 2 minutes.

Spit it out and repeat. Do this every hour when awake for 3 days.

1. White or yellow patches in the mouth (thrush, oral candidiasis)

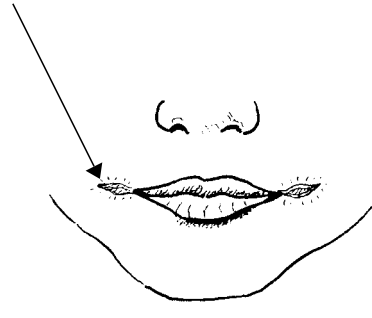


White, yellow, or (sometimes) red patches. The patches in this picture are behind the bottom, front teeth, but they most often appear on the roof of the mouth and the top of the tongue.

Thrush is the most common infection in the mouth seen in people with HIV infection. Thrush can also be a problem for people who do not have HIV. For more information about this, see page 105.

SIGNS:

- A burning or swelling feeling in the mouth, especially when eating spicy foods. Because of pain, eating and swallowing become more and more difficult.
- The skin inside the mouth is usually covered with white, yellow, or red patches. If you try to remove the white patches with a clean cloth, they will come off, but sometimes leave a bleeding red surface underneath. In some people they may not come off easily. In a few people, there are no white patches. Instead, the skin of the mouth is red and blotchy. It may look very rough.
- Sometimes there are painful cracks at the corners of the mouth that will not heal and sometimes bleed.



TREATMENT:

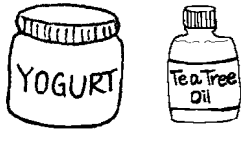
Gently scrub the tongue and gums with a clean cloth or soft toothbrush 3 or 4 times a day. Then rinse the mouth with salt water and spit it out (do not swallow). In addition, if possible, use any ONE of these remedies:

- Put 2.5 ml (½ teaspoon) of nystatin solution in the mouth and hold it there 2 minutes and then swallow it. Do this 5 times a day for 14 days. **OR,**
- Use either gentian violet or chlorhexidine gluconate mouthwash, as described in the "General Treatment" box on page 178 and 179. **OR,**
- Cut or break a 100 mg clotrimazole vaginal insert into 2 pieces. In the morning, put 1 piece in the mouth and let it slowly melt there. Use the second piece at night. The package may say: "Do not take by mouth." This means do not swallow it. It is safe to let it melt in the mouth, making sure it covers the whole inside of the mouth, and then spit it out. Do this 2 times a day for 7 days (14 days if the infection is very bad). **OR,**
- Depending on how bad your problem is, suck one or two 100,000 unit nystatin lozenges, 4 or 5 times a day for 10 to 14 days.

If thrush is very bad, or if it moves into your throat and makes it hard to swallow, you may try one of these stronger medicines instead of the remedies above. (But do not take either of these medicines if you are pregnant or breastfeeding):

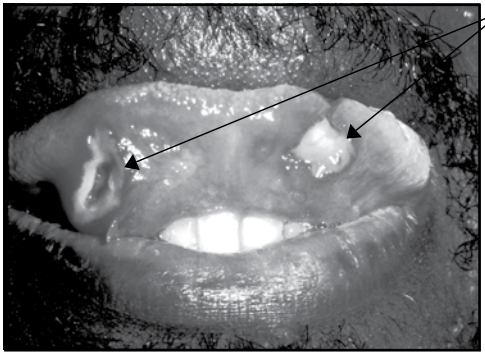
- Take 400 mg of fluconazole by mouth. The next day take 200 mg of fluconazole once each day for 14 days. But if you do not feel better in 3 to 5 days, increase the dose to 400 mg once each day. **OR,**
- Take one 200 mg tablet of ketoconazole, by mouth, once a day with food for 14 days.

Some people get relief from thrush when they paint the inside of the mouth with a little tea tree oil or yogurt.



tea tree

2. Sores of the skin of the mouth (ulcers)



Open sores (ulcers) that can appear anywhere in the mouth. Usually the skin around the sores is red. The sores in this picture are on the inside of the top lip.

Most people from time to time have had a small open sore (ulcer) in the mouth caused by an infection that has destroyed the skin in that area. It is usually painful and can make eating and speaking difficult for 1 or 2 weeks. The ulcer heals if the mouth is kept clean. For people with HIV infection, the healing process can be very slow and sometimes the sore area in the mouth becomes very large. This is especially true if the person is taking anti-retroviral medicines to weaken HIV, such as zidovudine (AZT).

SIGNS:

The skin lining the mouth or on the tongue is broken and will probably look much redder than the skin that is not broken.

TREATMENT:

Keep the area clean to control the infection and to help the skin heal. Clean the sores with a cotton swab dipped in 1% povidone iodine. Or use any of the methods described in the "General Treatment" box on pages 178 and 179.

Also give antibiotics if:

- the skin around the ulcer is very swollen, **AND**
- you feel soft lumps (lymph glands) underneath the lower jaw bone.

  Give 500 mg of amoxicillin by mouth, 3 times a day for 7 days. (Not safe for people allergic to penicillin. **Anyone who is allergic to penicillin will also be allergic to amoxicillin and ampicillin**).

  OR 100 mg of doxycycline by mouth, 2 times a day for 7 days. (Not safe for women who are pregnant or breastfeeding).

  OR 500 mg of tetracycline by mouth, 4 times a day for 7 days. (Not safe for women who are pregnant or breastfeeding).

  OR 500 mg of erythromycin, 4 times a day for 7 days.

3. Infection of the gums (Vincent's Infection, trench mouth)

The skin around the teeth (the gums) is painful, red and puffy with oozing yellow liquid (pus).

Many people have some infection of the gums around their teeth. The amount of infection depends on how clean the mouth is kept and how well a person's body can fight off disease. If the mouth and gums are not kept clean, the infection may get so bad that it will spread to the jaw bone and other tissues nearby and the teeth will eventually loosen and fall out.

Because the body of someone with HIV infection is less able to fight off disease, any gum infection will quickly get worse if the person does not keep his mouth and teeth clean. This can be very serious. If a person with HIV loses his teeth and cannot eat, he will become even more ill.

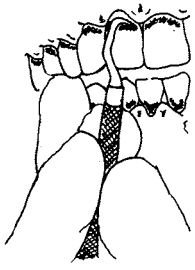
SIGNS:

- The gums are red, puffy, and very painful.
- There may be yellow liquid (pus) oozing from the gum around one or more teeth.
- The gums between several teeth have sores (ulcers).
- The person's mouth smells very bad.

If the infection of the gums is very bad and advanced (as it can be for a person with HIV), the signs may include:

- red, raw ulcers of the gums.
- the roots of the teeth will show.
- pieces of the jaw bone can be seen at the bottom of the ulcers.
- some teeth are loose.

TREATMENT:



- Keep the area clean to control the infection and to help the skin heal. Use any of the methods described in the "General Treatment" box on pages 178 and 179.
- Very gently remove the tartar around the teeth. Be especially careful not to cause damage to the gums (see "Scaling Teeth" on pages 127 to 133).

Also give antibiotics if:

- the neck is sore or stiff, and there are soft lumps just underneath the lower jaw bone.

  Give 500 mg of amoxicillin by mouth, 3 times a day for 7 days. Women who are pregnant or breastfeeding can use this treatment.

  OR for persons allergic to amoxicillin, give 100 mg of doxycycline by mouth, 2 times a day for 7 days.

  OR give 500 mg of tetracycline by mouth, 4 times a day for 7 days. Do not give tetracycline to pregnant women because it can harm a baby's developing teeth.

  OR for women who are pregnant or breastfeeding, and are allergic to amoxicillin, give 500 mg of erythromycin by mouth, 4 times a day for 7 days.

- the gums between the teeth have ulcers, and the person's mouth smells bad.

  Give 500 mg of metronidazole by mouth, 2 times a day for 7 days.

Once the area is clean and the infection is controlled, take out any teeth that are very loose (see pages 157 to 161).

More serious gum infection (gangrene of the face, Noma, Cancrum Oris)

SIGNS:

In the most severe gum infection, the jaw bone will become infected and this can spread through the cheek to the face. This will be very easy to see, as parts of the face and jaw rot away and smell bad. It happens mainly to very sick children (usually one to four years old), but can also happen to adults with HIV infection.

TREATMENT:

Get medical help as quickly as you can—in a hospital if possible.
In the meantime, use the information on pages 122 to 124 for cleaning and treating the gangrene.

The medicines (antibiotics) listed on page 123 are for children. For an adult, give the following:

For an adult who is able to swallow:

- give 400 mg of metronidazole by mouth, 3 times a day for 10 days,

  OR

- if clindamycin is not available give 500 mg of erythromycin by mouth, 4 times a day, for 10 days.

- **OR** if you cannot get metronidazole give 450 mg of clindamycin by mouth, 4 times a day, for 5 days.

NOTE: Clindamycin, erythromycin, and metronidazole are OK to use for women who are pregnant or breastfeeding.

For an adult who cannot swallow:

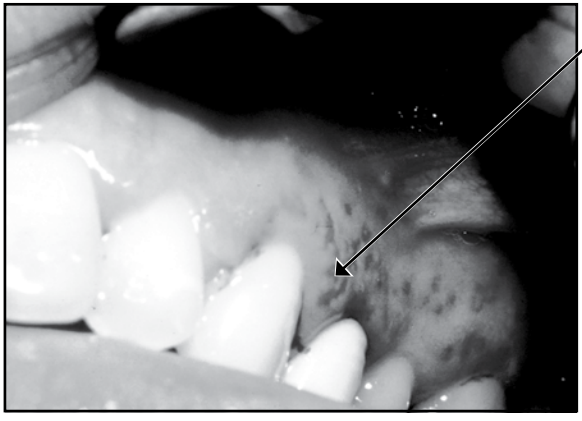
- inject 2,000,000 (2 million) units of penicillin G into a large muscle, 3 times a day, for 7 days.

For an adult who is allergic to penicillin,

- inject 600 mg of clindamycin into a large muscle, 4 times a day, for 5 days.

If you give the medicines by injection, change to medicines by mouth once the person starts to feel better. But do not stop giving the medicines until the 7 to 10 days have passed.

4. Cold sores or fever blisters



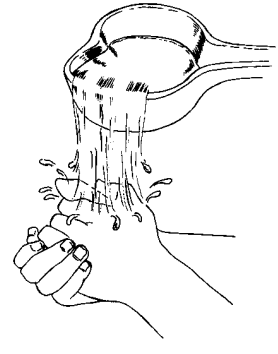
Painful red blisters on the gums that have burst open and become small, open sores.

Many people get cold sores or fever blisters caused by the herpes virus. People who become infected with herpes carry the virus forever. Most people are infected as children. The herpes sores can come and go. For more information, see page 104.

The herpes sores usually heal after 1 or 2 weeks. But for persons infected with HIV, the sores come more often and last much longer.

SIGNS:

1. One or more small, sometimes painful, red blisters appear on the lips and skin around the mouth. In people with HIV infection, they also appear just inside the lips, and on the gums and the roof of the mouth.
2. The blisters burst and become small open sores that often spread into each other.
3. After the blisters on the lips burst, a yellow crust forms over them.

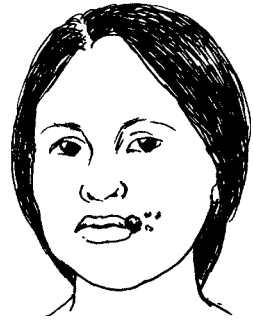


The herpes sores can pick up other infections, particularly in people with HIV infection. Also, the liquid inside the sores and blisters can spread infection. **If herpes is spread to the eyes, it can cause blindness.** Keep fingers and hands away from sores because they contain very active virus. It is very important to wash the hands before and after touching the face or eyes.

TREATMENT:

Medicine cannot kill the herpes virus. Keep the area clean to control any infection in the sores and to help them heal. Keep fingers and hands away from the sores, and drink lots of fluids. Use any of the methods described in the "General Treatment" box on pages 178 and 179.

Also:



- Begin treatment as soon as you feel a tingling, before the cold sore appears. This may stop the sore from developing or developing so severely.
- A medicine called acyclovir may also help. Give 200 mg by mouth, 5 times a day for 7 to 10 days. You can also apply a small amount of acyclovir ointment on the sores 6 times a day for 7 days. It is OK to use them both at the same time. Acycolvir works best if taken or used early in the infection, before the blisters burst, if possible.
- If the sores are infected, give 500 mg of amoxicillin, 3 times a day for 7 days.

  OR for persons allergic to amoxicillin, give 100 mg of doxycycline, 2 times a day for 7 days.

  OR for a woman who is allergic to penicillin, and is pregnant or breastfeeding, give 500 mg of erythromycin, 4 times a day for 7 days.
- Antibacterial ointments such as neomycin or bacitracin can also help to prevent and control other infections that get into the sores. Stop using the acyclovir and spread a small amount of anti-bacterial ointment on the infected skin outside the mouth (not in the mouth) 2 to 5 times a day for about 5 days.
- To help ease the pain of sores outside the mouth, stop using acyclovir and cover the area with a dry powder, like baby powder, talc, or cornstarch. Do not use medicated powders as they can make the open sores sting very badly. Wash hands carefully before and after using powder.

5. Red or purple patches in the mouth (Kaposi's sarcoma)

Painless, red-, brown-, or purple-colored patches (that look like swollen bruises). They can appear anywhere in the mouth. The patches in this picture are on the top (roof) of the mouth.

Some people infected with HIV will get red- or purple-colored patches in the mouth. These patches are called Kaposi's sarcoma and they can also appear elsewhere on the body. Kaposi's sarcoma can be an early sign of HIV infection.

SIGNS:

Painless patches that look like swollen bruises around or inside the mouth. The red or purple color is more obvious in the mouth. The patches rarely become infected and painful, usually only if they burst.

TREATMENT:

Get advice from a health worker or doctor who is experienced with the problems of HIV. People who are taking anti-retroviral medicines (ARVs) tend not to get this kind of cancer. And starting treatment with ARVs can keep it from getting worse. Sometimes very strong anti-cancer medicines are used. Also, some medicines for treatment of varicose veins can be helpful.

6. Dry or painful mouth and throat

Many people with AIDS have difficulty eating near the end of their lives because of a dry or painful mouth and throat. But it is important to eat nutritious food during a sickness, even a serious sickness like AIDS. The person will feel much more comfortable and have less pain and infection if he or she can eat well.

A dry mouth can be caused by an infected swelling in the glands of the mouth that usually make spit (saliva). This is most common for people taking ARVs (anti-retroviral medicines). A painful mouth can be caused by other infections and problems that come with HIV and AIDS. For information about how to treat an infection of the spit gland, see page 119. For help with eating if the mouth is very dry or sore, try the following:

- Eat soft foods in small pieces that are easy to chew and swallow.
- Cook foods until they are soft and tender.
- Mix foods with liquids to make them easier to swallow.
- Keep a small bottle of drinking water with you all the time.
- Use a straw to drink fluids.
- Do not eat hot or spicy foods. They can irritate a sore mouth and throat.
- If it is difficult to swallow, tilt the head back a little, or move it forward.
- Rinse the mouth with clean water often. This will remove food and germs, and help with healing.

HELPING PEOPLE WITH HIV IN YOUR COMMUNITY

As a dental worker or health worker, you can make a great difference in the well-being of both the person with HIV and his or her family. Take a special interest in them and help them find ways to get the care and companionship they need.

Care During the Final Days

During the final days of their illness, most people with AIDS prefer to be at home with their families. Both the sick person and the family need a lot of care and help during this time. This includes care for health problems and personal needs, as well as help with social and legal issues.

You can support the family if you organize volunteers in the community to:

- provide food and cook meals.
- help with daily household chores.
- look after babies and children whose parents are dying, or who may have already died.
- help with funeral arrangements.

It may also help to ask other family members, friends, or a religious leader to visit the family and the person who is dying. This support can help the sick person to die with dignity, and the family to cope with losing a loved one.

WORKING FOR CHANGE IN YOUR COMMUNITY

By teaching and talking about HIV, dental workers can play an important role in helping to stop the spread of the disease.

Treating people with HIV infection helps to prevent its spread.

You can help if you:

- Learn as much as you can about HIV, how it is spread, and how to prevent it.
- Share your knowledge about HIV with others in community meeting places—like schools, stores, religious meetings, restaurants and bars, and military bases.
- Teach people how to practice safer sex to stop the spread of HIV. Safer sex is when no body fluids pass from one person to another during sex.
- Educate people about the importance of using clean needles for injections. In hospitals and health centers, make sure your needles come out of a sealed, sterile packet. Set up needle exchange programs for IV drug users in your community.

Practice Safer Sex

Safer sex means to:

- have sex with only one partner who has sex only with you.
- always use condoms during sex, and help women learn how to ask men to use them.
- think of other ways to have pleasure, such as touching genitals with the hands, and rubbing or massaging different parts of the body.
- not have sex with someone who shares drug injection needles.

If the whole community has good information about HIV and safer sex, men and women and their partners may feel more comfortable making changes in their sex lives to protect themselves. No one has become infected with HIV because he or she spoke openly and honestly about safer sex.

Although it can be difficult to speak openly about sex, to help prevent the spread of HIV it is necessary to talk about what is risky sex and what is safer sex.

How risky are different kinds of sex?

- sex in the anus without a condom
- sex in the vagina without a condom
- sex with many people
- sex when the vagina is dry
- sex with someone who has had sex with many people

- sex without ejaculation ("pulling out")
- sex using a diaphragm

- sex with only one person who only has sex with you
- oral sex (mouth on penis or vagina)
- sex using a condom

- kissing or touching
- mutual masturbation

Treat Everyone with Respect

All people have a right to be respected, including people who have HIV. Set an example in your community by supporting people with HIV, their partners, and their families. Some people think AIDS is a "disease of outsiders" or of "bad" people. They think HIV does not affect "good" people like them. But HIV affects rich and poor people, men and women, people of all races and religions, health workers, and religious leaders.

Many people are afraid to take the HIV test or seek treatment because they think they will be treated badly. We must all take care not to let our fear of HIV and AIDS make us treat people unfairly. Anyone who is ill should be cared for with kindness and respect.

As a health and dental worker, you and other community and religious leaders can help people with HIV get health services, housing and jobs. You can help people treat each other with respect, and you can encourage people who have HIV to become involved in their treatment and in their community's activities.

Remember, you can help support the human rights of people living with HIV or someone who people think is living with HIV. Discriminating against them violates their human rights.

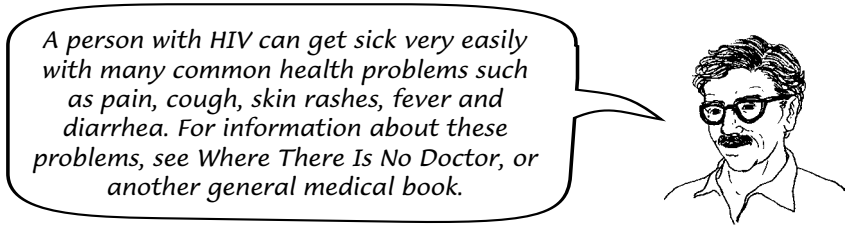
HIV is not a curse or a punishment.

Set an Example and Share Good Information

The example you set and the information you share will help fight the fear people have of knowing, touching or living with someone who has HIV. Make sure people know that HIV is not spread by ordinary daily contact. HIV is not spread by hugging, touching, holding or shaking hands, by dancing, using the toilet after someone with HIV, or eating food prepared by a person with HIV. People can share dishes, towels, and bed sheets and not become infected with HIV. Also, it is not possible to get infected from someone's tears, sneeze or spit, or from a mosquito bite.

Other viruses such as measles or chicken pox are spread easily through the air. But HIV spreads only if certain body fluids of a person with HIV get inside another person.

As a health worker, you can help people make decisions based on good information and not fear. A good way to begin is to plan a meeting to discuss HIV with other health workers in your area or region and with someone from a regional HIV organization. He or she can help health workers learn about HIV so they will be able to provide accurate, consistent information to the people in their communities. They can also learn about the best ways to treat the infections that people with HIV often get.


A person with HIV can get sick very easily with many common health problems such as pain, cough, skin rashes, fever and diarrhea. For information about these problems, see Where There Is No Doctor, or another general medical book.

FOLLOW YOUR OWN ADVICE

As a dental worker and health leader, you can have a great impact on your community's health and well-being if you set a good example. It is not enough just to give health education talks and tell people how to behave. As you talk to people about the importance of practicing safer sex, you must remember to also practice safer sex with your own sexual partner. A dental worker who does not practice safer sex can become infected with HIV and pass the virus to others.

Here is an example of what can happen to dental workers if they do not follow their own advice:

> Two years ago, in one region of a country, there were 15 health centers that provided dental services. Today, 5 of the centers can no longer provide these services because their dental workers—all men—have died from AIDS. Also, 2 of the 15 students in a recent dental training course—a man and a woman—have HIV. No one knows exactly how each one got infected with HIV, but most people believe it was because they were not careful with their sexual partners. The dental workers and students gave many health education talks to tell people how to behave, but people in the community could see that they did not follow the advice themselves.

Think of Yourself as a Teacher

As a dental worker, you will be able to improve the health of the people in your community and help prevent the spread of HIV if you think of yourself as a teacher. The knowledge you share can have a more lasting impact on the health and well-being of a community than your skills as a dental worker. By making connections with people and organizations working on different aspects of HIV , you will learn new information that can help you and your community. Contact local, regional, and national groups who work on HIV education and prevention, on providing service for people with HIV, and on expanding access to ARVs and other medicines.

Help people with the resources you have, and think about where you might find more resources to help meet people's needs.

If all health workers can give the same correct, up-to-date information, it will help prevent the fear caused by wrong ideas about AIDS. If their neighbors are not afraid of them, people with HIV—as well as those who care for them—can become more accepted in the community. Then they can help others understand every person's real risk of getting HIV. So learn as much as you can about HIV and share the information with everyone.

Remember to:

- Give advice to the people you treat, especially those most at risk for getting infected, such as young people, migrants and refugees, sex workers, drug users who share needles, and anyone having sex with more than one faithful partner.
- Fight for improvements in the social and legal services available for people with HIV. Remember, the fight is against the conditions that lead to the spread of HIV, and not against people who have HIV.

Fight to end discrimination against those infected with HIV. Discrimination is an obstacle to care. It may stop people from coming for treatment and it may stop people from learning how to prevent the spread of infection.

APPENDICES

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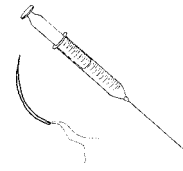
Get Rid of Wastes Safely

Every time you examine a person's mouth, fill a cavity, or extract a tooth, you are left with some waste. For example, used cotton or gauze, disposable needles and syringes, plastic gloves, and other materials must be thrown away. But **do not put them in the trash.** These wastes carry germs and can spread infections to you and to people in the family and community. Wear gloves when you touch wastes, and get rid of them carefully.



HOW TO DISPOSE OF SHARP WASTES

Sharp wastes must be put into a container so they will not injure anyone who finds them. A container made of metal or heavy plastic, with a lid or tape to close it, works well.

When the container is half full, add 5% bleach solution, then seal it closed and bury it deep in the ground.

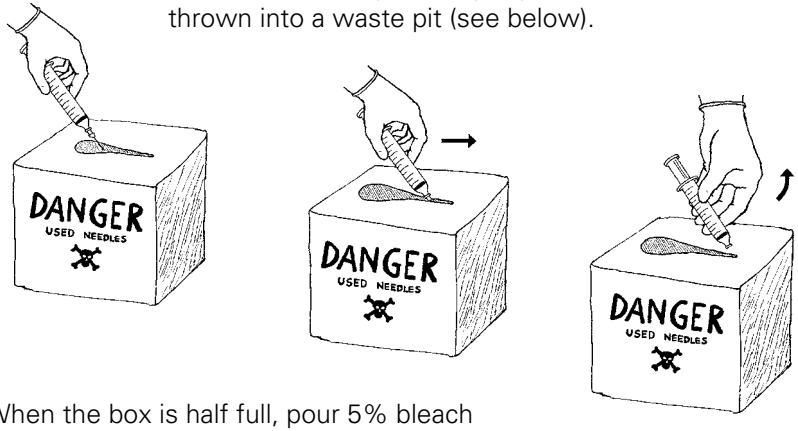
Make a box to dispose of needles safely

Find a metal or hard plastic box. Make a long hole in the lid of the box that is wide on one side and gets narrower on the other side.

(continued on next page)

When you have finished using a disposable syringe, put the needle into the box and slide it down to the narrowest point.

Then pull up on the syringe and the needle will fall off into the box. The plastic syringe can be sterilized and thrown into a waste pit (see below).



When the box is half full, pour 5% bleach solution into the box, seal it closed, and then bury it deep in the ground.

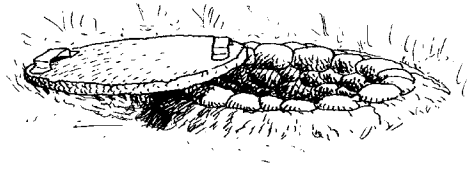
OTHER WASTES

Other wastes, like plastic gloves, syringe barrels, or cloth soaked in blood, should be sterilized and then buried deep in the ground. You can sterilize them by soaking them in bleach for 20 minutes.

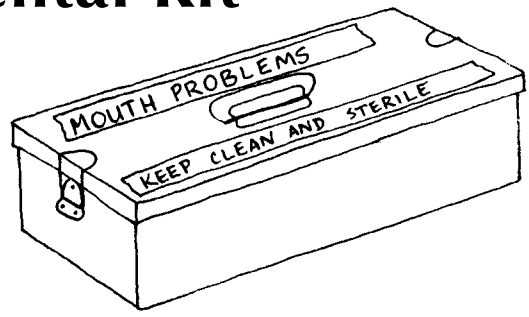
WARNING: **Do not burn plastic gloves, syringes, or any other plastics.** Burning plastic wastes is dangerous—when plastic burns, it makes smoke and ash that is very poisonous.

BURYING WASTES

Find a place away from where people get their drinking water and away from where children play. Dig a safe waste pit to bury wastes.



The Dental Kit



In the next 10 pages, there are lists of medicines, instruments, and other supplies recommended in this book. Keep them together in a kit. **You may want to change some of them, or add others to meet your own needs.**

As a dental worker, you will be able to get many of the items on the lists from your government medical stores. Some things you will have to buy yourself. That can be expensive, so we make several suggestions to help you save money.

Before you order, decide how many of each thing you need. Ask yourself: How many persons do I treat each day? For what problems? Then order enough medicines and supplies for three months.

> *NOTE:* **As more people learn about the treatment you can give, more will come to ask for your help. Remember this when you order. Remember, also, that some persons may need more than one treatment.**

On pages 202 to 207 we give an example. We recommend how many medicines, supplies, and instruments you will need if you see 10 people a day—200 a month. You cannot be exact, of course, because you cannot predict exactly what problems will arise. However, we can say that, **on the average:**

In a group of 10 persons with urgent problems:

- 6 persons need you to take out 1 or more teeth (so you must inject)
- 2 persons need cement fillings
- 2 persons need medicine before you can treat them.

Many of these persons must return for another visit:

- 5 persons need you to scale their teeth and teach them how to care for them better
- 1 person will need a cement filling
- 2 persons will need treatment after taking medicine.

MEDICINES

Use	Proper Name	local name (write in here)	Amount you need in 3 months	Amount to keep in kit	See Page
For Pain	**1.** aspirin, 300 mg tablets	_____	2,000 tablets	100 tablets	**94**
	2. acetaminophen (paracetamol) 500 mg tablets	_____	500 tablets	10 tablets	**94**
For infections	**1.** penicillin, 250 mg tablets	_____	2,000 tablets	100 tablets	**94**
	2. erythromycin, 250 mg tablets	_____	500 tablets	40 tablets	**94**
	3. nystatin drops or gentian violet	_____	12 small bottles	2 small bottles	**105**

Another antibiotic, tetracycline, is not recommended for any of the treatments in this book because it is a broad-spectrum antibiotic. Narrow spectrum antibiotics (see 'antibiotics,' page 217) are usually safer and just as effective for most dental problems. If you do use tetracycline, read page 356 of *Where There Is No Doctor* and remember, **do not give tetracycline to a pregnant woman or to a young child.** Tetracycline can make a young, developing tooth turn yellow.

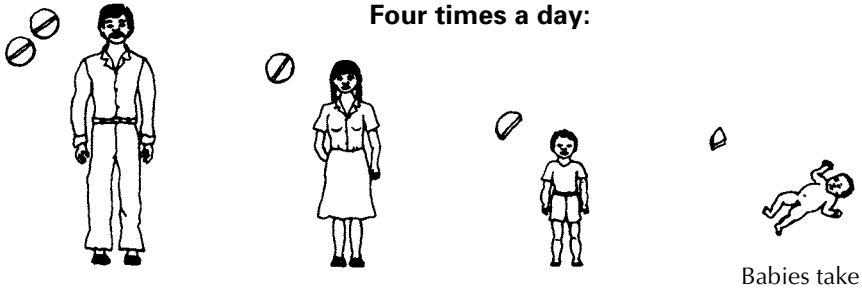
SUGGESTIONS:

1. Compare prices before you buy medicines. Often the same medicine has many different names. The ***generic name*** (the name we use on this page) usually is cheapest, and the medicine is just as good as the 'brand-name medicines'. Use the generic name to order and buy, not the brand name.
2. Always look for a date on the package. It is called the expiration date (or expiry date). **If today is later than that date, do not buy or use that medicine.**
3. Be careful to give the correct dose. Read the next two pages carefully, as well as the 'Treatment' section of each problem in Chapter 7. If pages 203 and 204 are not clear to you, read Chapter 8 (pages 59 to 64) of *Where There Is No Doctor.*
4. For serious infections or serious pain, see page 204.

THE CORRECT DOSE

Before you give medicine, think about the sick person's weight and age. The smaller children are, the less medicine they need. For example, pain medicine such as aspirin (300 mg tablets) or acetaminophen (500 mg tablets) can be broken up into smaller tablets:

Four times a day:



Adults take 2 tablets

Childen 8–12 take 1 tablet

Children 3–7 take ½ tablet

Babies take **acetaminophen only, ¼ tablet**

NOTES: Do not hold aspirin on the bad tooth. Aspirin has acid that can hurt the tooth. Always swallow aspirin immediately. **For severe pain,** when aspirin does not help, an adult can take 30 mg of codeine 4 to 6 times a day, as needed.

ANTIBIOTICS: TO FIGHT INFECTION

Antibiotics kill bacteria that cause infections. Some antibiotics work better than others on certain bacteria. If you can, test the pus (page 220) to find which antibiotic works best.

Do not give penicillin to a person who is allergic to it. Ask about the person's allergies before you give penicillin pills or injections. When you inject penicillin, always keep epinephrine (***Adrenalin***) ready to inject if the person shows signs of allergic shock. Stay with the person for 30 minutes. If you see these signs…

- cool, moist, pale, gray skin (cold sweat)
- weak, rapid pulse (heartbeat)
- difficulty breathing
- loss of consciousness

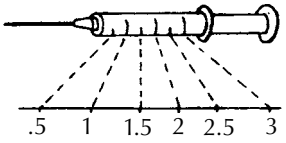
… immediately inject epinephrine: .5 ml for adults or .25 ml for children. If necessary, inject the same dose again after 20 or 30 minutes. For more information on allergic shock, see *Where There Is No Doctor,* pages 70 to 71.

Always give the full dose of penicillin or any antibiotic, even if the person feels better. See page 94 for the correct dose of penicillin or erythromycin. Erythromycin also comes in liquid form. It has 125 mg in 5 ml, so 10 ml of liquid (about 2 large teaspoons) is the same as one 250 mg tablet.

It is important to take a strong first dose of penicillin or erythromycin, and then smaller doses 4 times a day for 3 to 5 days after that. Carefully read the instructions on page 94.

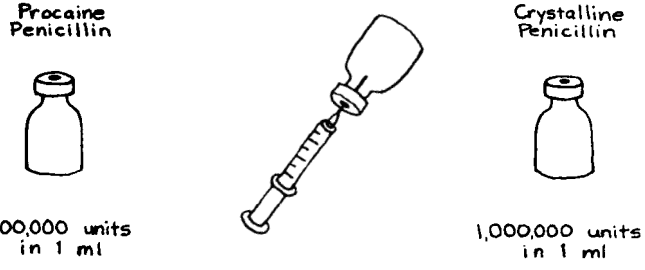
INJECTIONS: FOR SEVERE INFECTIONS

It is always safer to take medicine by mouth. Sometimes, however, an infection is so bad that you need to give medicine by injection. **Learn how to give injections from an experienced health worker.** The injections described on this page are not like the anesthetic injections in Chapter 9 of this book—you must inject these medicines into a large muscle in the buttocks or arm. For more instructions on this kind of injection, see Chapter 9 (pages 65-74) of *Where There Is No Doctor.*



3 ml syringe

For severe infection: There are 2 kinds of penicillin to inject.



You will usually use 'aqueous procaine penicillin'. Give only 1 injection per day.

For very severe infections, give 'crystalline penicillin' every 6 hours for the first day. It acts quickly and for a short time only.

INJECTABLE MEDICINES

	SUPPLIES		DOSE		
Proper Name	Amount you need in 3 months	Amount to keep in kit	Adult (over 40 kg)	Child 6–12 years old (22–39 kg)	Child 1–6 years old (10–22 kg)
1. procaine penicillin, bottle with 300,000 units per ml	200 bottles	4 bottles	4 ml 2 times/ day	2 ml 2 times/day	1 ml 2 times/day
2. crystalline penicillin, bottle with 1,000,000 units per ml	50 bottles	1 bottle	3 ml 4 times/ day	1.5 ml 4 times/ day	1 ml 4 times/ day

SUPPLIES

Use	Proper Name	Local name (write in here)	Amount you need in 3 months	Amount to keep in kit	See Page
To make dressings	1. clean cotton gauze	_____	8 packages of 100	20 pieces	**219**
	2. clean cotton rolls	_____	10 packages of 50	8 rolls	**146**
To fill cavities	3. oil of cloves (eugenol)	_____	50 ml	1 small bottle	**145**
	4. zinc oxide powder	_____	500 grams	1 small bottle	**145**
To treat sensitive teeth	5. flouride toothpaste	_____	1 tube	1 tube	**89**
To give injections of local anesthetic	6. lidocaine 2% 1.8 ml cartridge	_____	8 boxes of 100 cartridges	10 cartridges	**136**
	7. disposable needles, 27 gauge long	_____	8 boxes of 100 needles	10 needles	**136**
	8. lidocaine topical anesthetic	_____	5 small tubes	1 tube	**141**

FLUORIDE

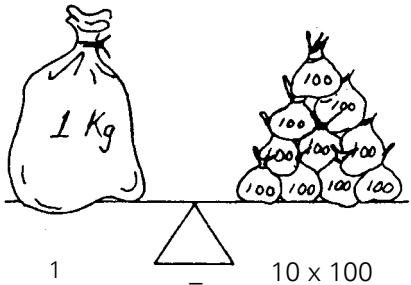
You can use a special solution of fluoride (if available) or any fluoride toothpaste, which is much cheaper and more common (see above, number 5), in 2 ways:

To treat a sensitive tooth: Put cotton rolls between the lip and gum on each side of the bad tooth. Dry the bad tooth with cotton and look for the small groove that is causing the pain. Cover the groove with a smear of fluoride toothpaste and tell the patient not to spit or rinse it out for several minutes. One week later, give the same treatment again, or have the patient do it himself.

To help prevent cavities, in children who do not clean their teeth with fluoride toothpaste, once a week have children bring their toothbrushes or toothsticks to school. Put some fluoride toothpaste on each child's brush or stick and have them brush and coat their teeth, leaving the paste in their mouths for at least one minute. Then they can spit it out. Do not eat or drink for 30 minutes.

On page 24, children are shown using a twice-yearly application of a special paste, a 'topical fluoride gel'. This is good, but the weekely treatment with fluoride paste is even better for the teeth.

Weight (how heavy something is)



1 kilogram (kg) = (equals) 10 x 100 grams (g)

1 Kilogram = 1000 grams

1 gram = 1000 mg

Volume (how full something is)

1liter 1 cup 1 teaspoon

1000 ml = 1 liter

236.5 ml = 1cup

5 ml = 1 teaspoon

1 ml = 1 cubic centimeter (cc)

Use	Proper Name	local name (write in here)	Amount you need in 3 months	Amount to keep in kit	See Page
To make rinses	1. salt	_____	2 kilograms	100 grams	**7**
	2. hydrogen peroxide	_____	3 liters	500 ml	**8**
To keep instruments clean	1. 95% alcohol disinfectant solution	_____	18 liters	1.5 liters	**89**
	2. bleach for disinfectant solution	_____	2.5 liters	125 ml (½ cup)	**89**
To keep instruments sharp	Arkansas sharpening stone	_____	1 stone	1 stone	**134**
For examining	wooden tongue depressors	_____	8 boxes of 50 per box	10	**75**

SUGGESTIONS:

If you order your supplies in bulk long before you need them, you probably will pay lower prices. If you have a place to store supplies that is clean, dry, and free from cockroaches and rats, consider ordering enough for one year instead of only 3 months.

INSTRUMENTS

When you are treating several people on the same day, you will need to clean some instruments (see pages 86 to 89) at the same time that you are using others. Therefore, it is necessary to have several of each kind of instrument, to be sure that the instrument you need will be ready (clean or sterile) when you need it.

There are 3 instruments you will need for each person who comes to you, no matter which treatment is needed. They are: a mirror, probe, and cotton pliers. Keep them together. Below we recommend that you have 15 of each of these, so you can keep one in each treatment kit. **You do not need to buy all of these instruments.** You can make several of them—see pages 208–210. If you like, buy only one example of each of the instruments below, and use them as models to copy when you make your own extra instruments.*

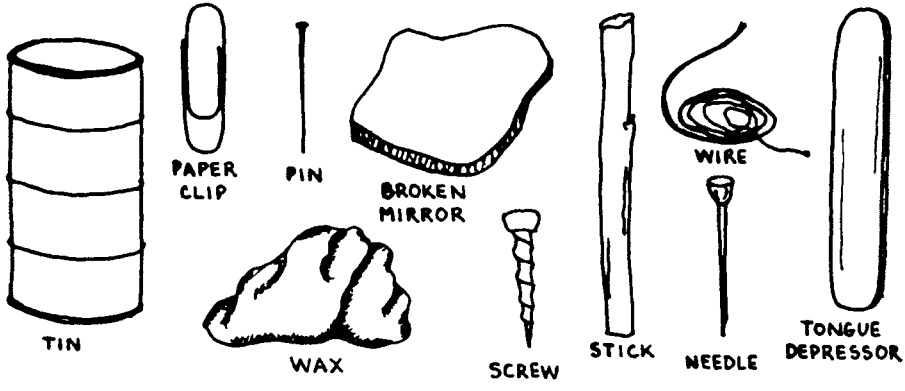
Use	Proper Name	Local name (write in here)	Number to buy or make	See Page
To examine or to give any treatment	1. dental mouth mirror	_____	**15**	**75**
	2. explorer	_____	**15**	**75**
	3. cotton pliers	_____	**15**	**128**
To inject	Aspirating dental syringe to use with 1.8 ml cartridges)	_____	**3**	**135**
To scale teeth	1. Ivory C-1 scaler	_____	**1**	**128**
	2. Gracey 11–12 curette	_____	**1**	**128**
To place cement fillings	1. spoon excavator	_____	**1**	**145**
	2. filling instrument	_____	**1**	**145**
	3. cement spatula	_____	**1**	**145**
To remove teeth	1. spoon excavator	_____	**3**	**145**
	2. straight elevator (no. 34)	_____	**3**	**155**
	3. upper universal forcep (no.150)	_____	**3**	**155**
	4. lower universal forcep (no.151)	_____	**3**	**155**

Note: See pages 155–156 for recommendations of other elevators and forceps that are good to have if you can afford them.

*If you want the help of a charitable organization in buying instruments, see page 211.

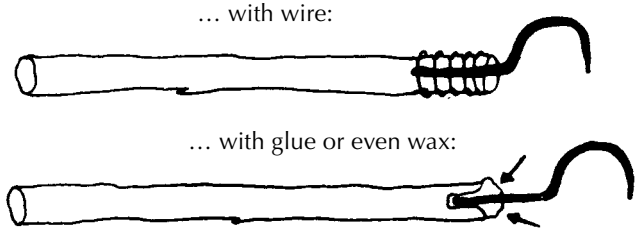
MAKING YOUR OWN DENTAL INSTRUMENTS*

Here are a few ideas for making instruments at low cost. Try to use materials that are available where you live.

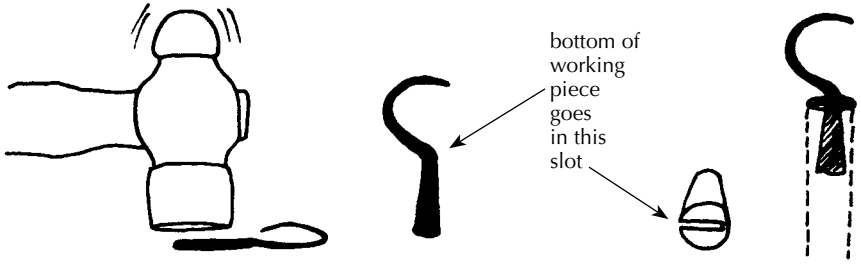


Can you think of any other materials you can use?

Each instrument has two parts: a **handle** and a **working piece** at the end. Join them together:



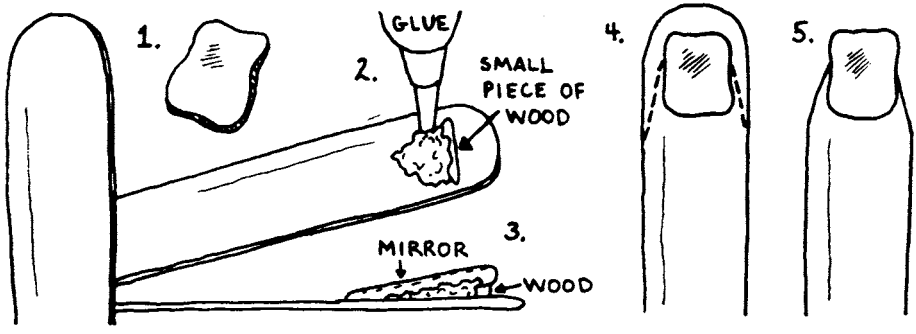
If you make the end flat, it can prevent the working piece from turning. Pound the working piece with a hammer and make a flat slot in the handle so the working piece cannot turn.



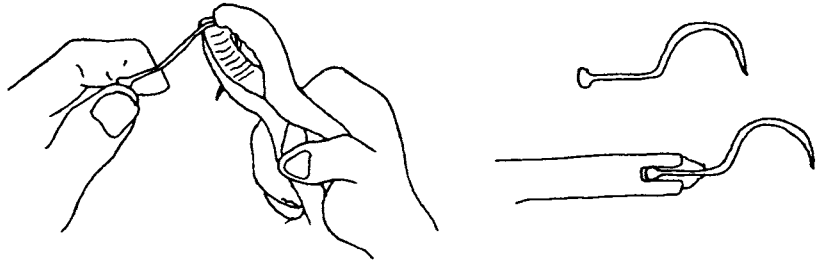
*I am grateful to Aaron Yaschine for the ideas in this section.

MAKING THE THREE INSTRUMENTS YOU USE MOST

Mirror: Use old pieces of mirror or a shiny piece of tin. You even can use a polished silver coin. A tongue depressor is the handle.



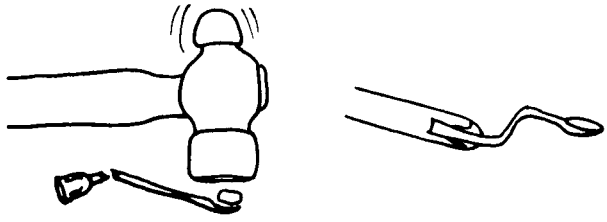
Probe: Use the end of a paper clip, pin or needle for the working piece. Rub it against a smooth stone to sharpen it. Bend it so it can reach around to the back of a tooth. Attach the working piece to a smooth stick handle (p. 208).



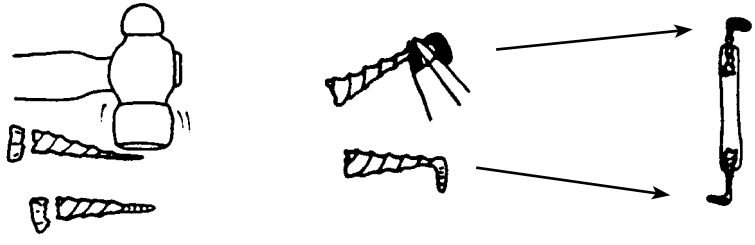
Tweezers: Draw the shape on a piece of tin and then cut it out with strong scissors. Use a file or a smooth stone to make the edges smooth. Bend in half to make the tweezers.

MAKING OTHER INSTRUMENTS AND SUPPLIES

Spoon: Bend a paper clip or needle. Flatten the end. Then pound a small stone against the end, to make it hollow. Make 2 bends and attach to a stick handle.

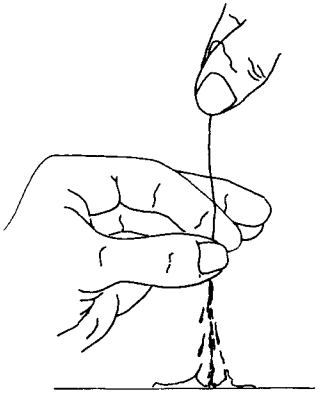


Filling Tool: Remove the heads from 2 long screws. With a file and hammer, make the end of one screw flat and the end of the other screw round. Bend each end in the direction of the edge (not the face) of the flat side. Attach both working pieces to a small stick handle.



Dental Floss: When using string to clean between your teeth (pages 71–72), you may have trouble getting this string down in between your teeth. Sometimes, also, the string gets caught there, forming a kind of 'bird's nest'. Three things can cause problems with dental floss:

1. **An incorrectly made filling**—flat and rough instead of round and smooth. Replace the filling.
2. **Teeth too tight together.** Use the floss on a tooth. Then pull the string out from between the teeth as you press the free end down against the gum with the fingers of your other hand. If there is a sharp filling on a tooth, the string will pass under the filling as it comes free.
3. **String that is too thick.** Make thinner but stronger floss by waxing as in this picture. The wax also will make the floss easier to slide between your teeth.



(1) Soak thin string in hot wax.
(2) To remove the extra wax, pull the string between your fingers.

BUYING DENTAL INSTRUMENTS

When you do not have much money, you must spend wisely. Dental instruments are very expensive, especially when you buy them at commercial prices. Ask other health workers in your area where you can get instruments at lower prices. You can also try contacting the national dental association in your country. If you do not know how to locate your national dental association, contact the World Dental Federation:

FDI – World Dental Federation
Tour de Cointrin
Case Postal 3
1216 Geneve-Cointrin
SWITZERLAND
tel: 41-22-560-81-50
fax: 41-22-560-81-40
website: www.fdiworldental.org
e-mail: info@fdiworldental.org

There are many organizations that donate health supplies—including dental instruments—or that distribute them at low cost. Some of these organizations prefer to help church-sponsored health projects, but others will provide instruments to anyone who needs them.

Durbin PLC, a company in England, may sell the instruments mentioned in this book at lower than commercial prices. For more information, contact:

Durbin PLC
180 Northolt Road
South Harrow, Middlesex HA2 0LT
UK
tel: 44-20-8660-2220
fax: 44-20-8668-0751
website: www.durbin.co.uk
e-mail: cataloguesales@durbin.co.uk

Other organizations that may be able to help:

World Dental Relief
PO Box 747
Broken Arrow, OK 74013-0747
USA
tel: 1-918-251-2612
fax: 1-918-251-6326
website: www.dentalrelief.com
e-mail: dentalreliefinc@aol.com

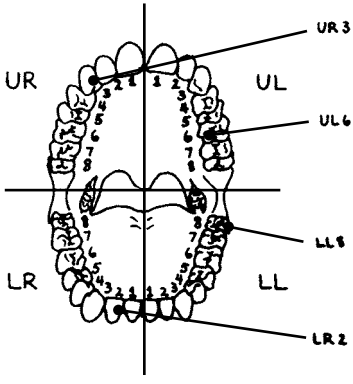
Project HOPE
255 Carter Hall Lane
Millwood, VA 22646
USA
tel: 1-540-837-2100
fax: 1-540-837-1813
website: www.projecthope.org
e-mail: webmaster@projecthope.org

Direct Relief International
27 S. La Patera Lane
Santa Barbara, CA 93117
USA
tel: 1-805-964-4767
fax: 1-805-681-4838
website: www.directrelief.org
e-mail: info@directrelief.org

MAP International
4700 Glynco Parkway
Brunswick, GA 31525-6800
USA
tel: 1-800-225-8550
website: www.map.org

Dentaid
Giles Lane, Landford,
Salisbury, Wilts SP5 2BG
UK
tel: 44-1794-324249
fax: 44-1794-323871
website: www.dentaid.org
e-mail: info@dentaid.org

Records, Reports, and Surveys



Here are the short names of 4 teeth. Can you find the tooth named LL5?

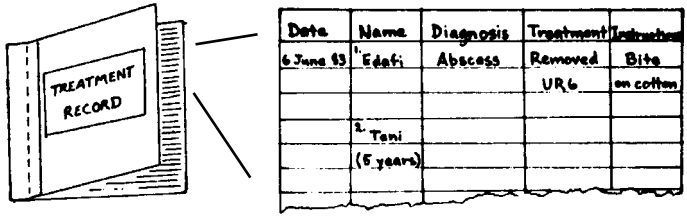
For record keeping, you can divide the mouth into 4 parts:

- Upper Right (UR)
- Upper Left (UL)
- Lower Left (LL)
- Lower Right (LR)

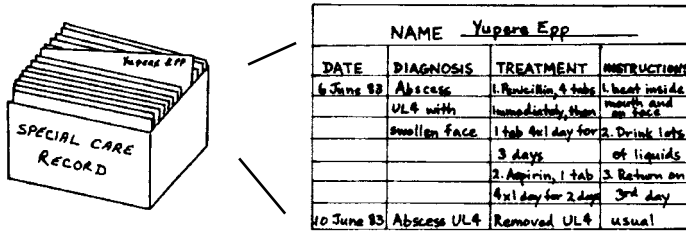
In each part there are 8 teeth (fewer in children—see page 43).

You can call each tooth by its short name, for example, UR3.

Keep a record of each person you see. Write some brief information about the person and the problem. This way, if the person returns, you remember what you did to help.



When a person needs to come more than once to take care of a problem, it is better to keep a special record for that person. With all the treatments on one page, you can follow that person's progress more easily. Below is an example for a person named Yupere. Yupere has a bad tooth that has hurt from time to time for 2 months. One day when he woke up, his face was swollen. Yupere decided to wait a day to see if the swelling would go away. The next day it was worse, so he went to the medical post for treatment.



Reports

You need to write a report whenever you send a person for medical help. Give as much information as possible so that your treatment can continue and new treatment starts as quickly as possible. If you cannot go along, **always send a report with a sick person.**

The story of Niame: After drinking for several hours, Niame's husband returned home asking for money. She had none and told him so. He did not believe Niame, so he beat her with his hands and then a knife. Naime's friends carried her, unconscious and bleeding, to the aid post. The front part of her lower jaw was hanging out of position.

URGENT! Pato, Naime

Date	DIAGNOSIS	TREATMENT	INSTRUCTIONS
31/12/81	Cuts to face, broken jaw	1. sutured cuts on face 2 Tetanus toxoid 0.5 ml 3. Proc. Pen. 1,200,000 units 4. Aspirin 5. head bandage	sent to Immanuel Hosp. tal at 11.30 P.M

Yalis Aid Post
December 31, 1981
time: 11:30 P.M.

Patient: Naime Pato, 25 years

Diagnosis: Cuts and a broken jaw

This lady was beaten by her husband tonight. I saw her at 10.30 P.M and treated her by:

1. suturing the cuts on her face.
2. giving tetanus toxoid 0.5 mls.
3. giving Procaine Penicillin 1,200,000 units
4. giving aspirin 2 tablets
5. making a head bandage to support her jaw.

Please treat her broken jaw. Later I can help her at home with a special diet.

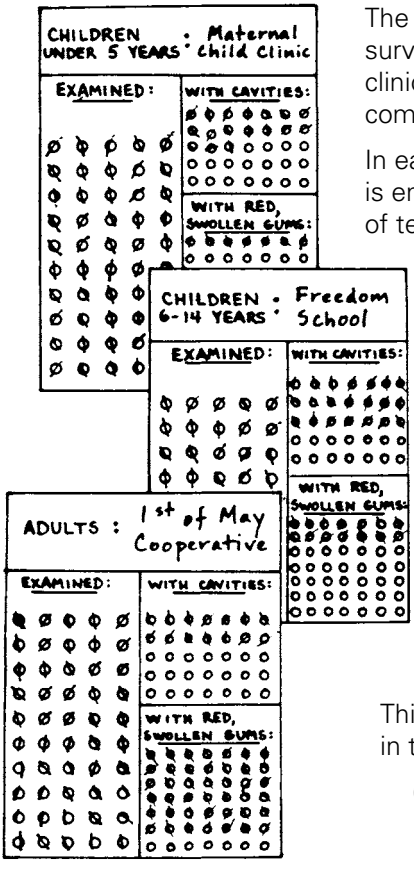
Sincerely,
Nisa Stephen
Aid Post Orderly

Surveys

It is a good idea to know how many persons in your community have cavities and gum disease. Look in the mouths of children and adults and make a record of what you see. Here is an example that is used in Mozambique:

Put a line through the circle for each person with:

- cavities Ø
- red, swollen gums Ø



The dental workers in Mozambique do a quick survey in 2 schools, 2 mother-and-child health clinics, and 2 cooperatives or factories in their community.

In each place, they examine 50 persons. This is enough to give an idea of the general health of teeth and gums in the community.

They make a paper for each age group. Each paper has 3 sections. They make a mark for each person they see, until all 50 circles have marks in them. They make extra marks if they see a tooth and/or gum problem.

In this example, you can see that children have more problems with cavities, while adults suffer more from gum disease. This is often true.

This survey helps the dental worker in three ways:

(1) it shows how serious tooth decay and gum disease are in the community.

(2) it shows which age group is suffering the most. To these people the dental worker must plan to give the most attention.

(3) it gives the dental worker something to show the people when they are discussing why to change some old habits and adapt some new ideas.

Resources

TEACHING MATERIALS

Common Oral Diseases, slide set.
An introduction to oral disease including periodontal disease and dental caries and their prevention. Also describes how a health worker should examine a patient's mouth and gives details of the common problems that a dental worker meets. Order from:

TALC
PO Box 49, St Albans
Herts, AL1 5TX
UK
tel: + 44 1727 853869; fax: + 44 1727 846852
e-mail: info@talcuk.org; website: www.talcuk.org

Guide for Safety and Infection Control for Oral Healthcare Missions
This is a practical guide to providing safe dental care in low-resource settings. Available from:

OSAP — Organization for Safety & Asepsis Procedures
A Global Dental Safety Organization
P.O. Box 6297
Annapolis, MD 21401
USA
tel: 1-800-298-6727; fax: 1-410-571-0028
e-mail: office@osap.org; website: www.osap.org

A Teacher Resource to Support Dental Health Education, an illustrated manual for teachers of Kindergarten through Grade 5. Includes lesson plans and activities. Can be downloaded from the internet here:
www.health.gov.sk.ca/mc_dp_dental_teacherresource.pdf

More information from:
Government of Saskatchewan
3475 Albert Street
Regina, SK S4S 6X6
CANADA

DENTAL AID ORGANIZATIONS

A listing of organizations around the world that provide different types of assistance for oral health education, training, and care can be downloaded from the internet here: *www.fdiworldental.org/public_health/assets/partners/aid/Aid_organisations.pdf*

OTHER ORAL HEALTH RESOURCES

FDI World Dental Federation
Tour de Cointrin
Case Postal 3
1216 Geneve-Cointrin
SWITZERLAND
tel: 41-22-560-81-50
fax: 41-22-560-81-40
e-mail: info@fdiworldental.org
website: www.fdiworldental.org

World Health Organization (WHO) Oral Health Programme
Avenue Appia 20
1211 Geneva 27
SWITZERLAND
tel: 41-22-791-3475
fax: 41-22-791-4866
website: www.who.int/oral_health
WHO has a Focal Point for Oral Health in each of its regional offices around the world. This web page gives contact information for each regional office, as well as other resources:
http://www.who.int/oral_health/partners/en/

WHO Collaborating Centre for Promoting Community-based Oral Health Models, Intercountry Center for Oral Health (ICOH)
Ministry of Public Health
548 Ban Nong Hoi,
Chiang-Mai-Lamphun Road,
Muang, Chiang Mai 50000
THAILAND
tel: 66-53-801160, 66-53-277027
fax: 66-53-281909
e-mail: icoh@icoh.org, icoh@loxinfo.co.th
website: www.icoh.org

www.hivdent.org
This website includes treatment information and training resources to improve oral health for people with HIV.

Regional Centre for Oral Health Research & Training Initiatives
No 3c CBN Road
PMB 2067, Jos
Plateau State, NIGERIA
tel: 234-73-462-901
fax: 234-73-462-901
e-mail: hdanfillo@yahoo.com,
isdanfillo@rcortiafro.org
website: www.rcortiafro.org

Basic Package of Oral Care is a WHO-affiliated program that aims to include preventive and curative oral health into the primary health care system in a way that is affordable and achievable for low-income communities. It includes urgent treatment (pain relief and emergency treatment), affordable fluoridated toothpaste, and Atraumatic Restorative Treatment (ART) which removes cavities and diseased parts of teeth without drilling. For more information:
Department of Global Oral Health, Nijmegen
Radboud University
Nijmegen Medical Center
P.O. Box 9101
6500 HB Nijmegen
THE NETHERLANDS
e-mail: info@globaloralhealth-nijmegen.nl
tel: 31-24-361-6995
fax: 31-24-354-0265
website: www.globaloralhealth-nijmegen.nl

International No-Noma Federation
c/o Winds of Hope Foundation
20 avenue de Florimont
CH 1006 Lausanne
SWITZERLAND
tel: 41-21-320-77-22
fax: 41-21-320-77-00
e-mail: info@nonoma.org
website: www.nonoma.org/en

VOCABULARY

This vocabulary is listed in the order of the alphabet:
A B C D E F G H I J K L M N O P O R S T U V W X Y Z

Most names of sicknesses are not in this vocabulary. Find the name of a sickness in the Index and read about it in the book.

There are many words in this vocabulary that are not in the rest of the book, but you may see them in other books or hear dentists use them.

A

Abscess A sac of pus caused by an infection. For example, a boil.

Acid A strong liquid that is produced from certain foods left in the mouth. Acid causes both tooth decay and gum disease.

Acute Sudden and short-lived. An acute illness is one that starts suddenly and lasts a short lime. The opposite of 'chronic'.

Adrenaline Also called **epinephrine.** A drug which stimulates the heart, used for severe allergic shock.

Adult teeth See **Permanent teeth.**

Allergy A bad reaction after breathing in, eating, touching, or being injected with something. The reaction may be itching, sneezing, or difficult breathing.

Analgesic Medicine to calm pain. Aspirin, acetaminophen (paracetamol), and codeine all are analgesics.

Amalgam A special metal used in permanent fillings.

Anemia A disease in which the blood gets thin. Signs include tiredness, pale skin, and lack of energy.

Anesthetic A drug that causes the mouth or other part of the body to feel numb.

Antibiotic Medicine that fights infections caused by bacteria. A **broad-spectrum** antibiotic such as tetracycline kills many kinds of bacteria, while a **narrow-spectrum** antibiotic like penicillin kills only a few kinds of bacteria.

Appropriate Something that is the easiest, safest, and most likely to work in a particular situation or condition.

Arkansas stone A special stone used to sharpen dental instruments.

Aspirate To breathe. An 'aspirating syringe' is one that can 'breathe', or allow liquid to go both in and out of the needle tip.

B

Baby teeth The first set of teeth. There are 20 baby teeth, which are also called milk teeth or primary teeth.

Bacteria Tiny germs that you can only see with a microscope and that cause many different infectious diseases.

Beeswax Wax made by honey bees.

Bicuspids The teeth between the canine teeth and the molars; premolars.

Bite (1) To cut with the teeth. (2) The way the upper and lower teeth fit together when they close.

Blood pressure The force, or pressure, of the blood flowing through the blood vessels (veins and arteries).

Blood vessels Tubes that carry blood through the body. Veins and arteries.

Boil (1) To heat water until it bubbles. (2) A swollen, inflamed lump with a pocket of pus under the skin. A kind of abscess.

Brand name Trade name, the name a company gives to its product. A brand-name medicine is sold under a special name and is often more expensive than the same generic medicine.

Bridge False teeth that are glued onto several nearby healthy teeth.

Buccal Of the cheek. The buccal face of a tooth is the side facing the check.

Bulk Large quantity or amount.

C

Calcium A nutritional element which makes teeth strong and hard.

Calculus Tartar.

Calories Units of heat found in food, giving energy for the body to use.

Cancer A tumor or lump that grows and may keep growing until it causes death.

Canine teeth Also called cuspids, dog teeth, and eye teeth. These teeth have the longest roots of any tooth.

Carbohydrates Starches and sugars—foods that give energy. In this book they are called GO foods.

Caries Cavities; tooth decay.

Cavity A hole in a tooth where bacteria have entered.

Cement filling A temporary filling, which may protect a tooth for up to 6 months. Also see Filling.

Cementum The outer covering of the tooth's root.

Chronic Long-term or frequently recurring (compare with 'acute'). A chronic disease is one that lasts for a long time.

Colony Germs grouped together in one place.

Contagious disease A sickness that can be spread easily from one person to another.

Contraindication A situation or condition when a particular medicine should not be taken, or a certain treatment not given. For example, many medicines are contraindicated during pregnancy.

Crown The top 1/3 of the tooth, the part that is protected with hard enamel.

Curette A scaling instrument.

Cuspids Canine teeth.

Cyst An abnormal, sac-like growth in the body which is often filled with water.

D

Decay See Tooth Decay.

Dentition A whole set of teeth.

Dental floss See Floss.

Dental worker A health worker who works for healthy teeth and gums.

Dentist A professional who has advanced formal education in care of teeth and gums.

Dentures False teeth.

Diagnosis A decision made by a health worker about what a person's illness is.

Diet The kinds and amounts of foods that a person should eat or avoid eating.

Dislocation A bone that has slipped out of place at a joint.

Distal The side of the tooth that faces the back of the mouth. The opposite side from the 'mesial' side.

Drill An instrument used to change the shape of a cavity before placing a filling.

Duct A tube that carries liquid. For example, ducts carry spit from the spit gland to the mouth.

E

Elevator An instrument used to loosen a tooth before you take it out.

Enamel The protective layer that covers the crown (top part) of a tooth. The enamel is the hardest part of the body.

Epulis A tumor of the gums, usually found between the teeth.

Eruption The moment when a new tooth cuts through the gums and becomes visible in the mouth.

Evaluation A study to find out the value of something, or to find out what has been accomplished. Evaluations often compare different conditions before and after a new activity begins.

Examination A careful look at something; an investigation.

Expiration date The month and year marked on a medicine that tells when it will no longer be good. Throw away most medicines after this date.

Explorer See **Probe.**

Extraction Taking out a tooth.

F

False tooth A 'tooth' made of plastic or other material, used to replace a tooth that has been taken out.

Fever A body temperature higher than normal.

Fiber A fine, threadlike piece. A **fibrous food** like coconut contains a lot of fiber.

Filling Material put into the cavity in a tooth to prevent further decay.

First aid Emergency care or treatment for someone who is sick or injured.

Floss Special string used to clean between the teeth.

Fluoride A chemical which strengthens the teeth. Painted on the teeth, as an ingredient in toothpaste, or added to water for drinking or rinsing, fluoride enters and hardens the enamel. It is especially good for children's teeth.

Forceps Instruments used to pull teeth

Fracture A broken bone.

G

Gauze A material made of cotton, woven into an open mesh.

Generic name The scientific name of a medicine. Usually different from the brand names given it by the different companies that make it.

Germs Very small organisms that can grow in the body and cause some infectious diseases; bacteria.

Gram A metric unit of weight. There are about 28 grams in an ounce. A paper clip weighs about 1 gram.

Groove A long, narrow cut on the surface of back teeth. Grooves are 'protected areas' because food and germs can hide and remain in them longer.

Gum bubble Also called a **gum boil**. A small abscess on the gums.

Gum disease Illness that causes gums to become loose, red, and swollen, and to bleed when the teeth are cleaned.

Gum pocket The space between the tooth and the flap of gums around it, forming a small pocket.

Gums The skin around the teeth.

H

Hemorrhage Bleeding.

Hemostat A needle holder, used for putting in sutures.

Herb A plant, especially one valued for its medicinal or healing qualities.

History (Medical history) What you can learn through asking questions about a person's sickness—how it began, when it gets better or worse, what seems to help, whether others in the village or family have it, etc.

Hydrogen peroxide A liquid used to clean wounds and kill certain bacteria.

Hypertension High blood pressure.

I

Immunizations (vaccinations) Medicines that give protection against specific diseases. For example, there are immunizations against diptheria, tetanus, polio, tuberculosis, and measles.

Incisors The four front teeth on the top and bottom.

Infection A sickness caused by bacteria or other germs. Infections may affect part of the body only (such as a sinus infection) or all of it (such as measles).

Infectious disease A disease that is easily passed from one person to another; contagious disease.

Inflammation An area that is red, hot, and painful, often because it is infected.

Inject To give a medicine such as an immunization or anesthetic, using a syringe.

J

Joint The place where two bones meet. When this book talks about the 'pain in the joint', it means the joint (called the 'temporomandibular joint') where the cheek and jaw bones meet.

K

Kilogram (kg) One thousand grams. A 'kilo' weighs a little more than 2 pounds.

L

Labial Of the lips. The labial side of a tooth is the face of the tooth nearest the lips.

Ligature wire A thin, strong wire that bends easily, used to attach a loose tooth to a strong tooth.

Lingual Of the tongue. The lingual side of a tooth is the face of the tooth nearest the tongue.

M

Malnutrition Health problems caused by not eating enough of the foods that the body needs.

Mandible The lower jaw bone.

Maxilla The upper jaw bone.

Mesial The side of the tooth that faces the front of the mouth; the opposite of 'distal'.

Milligram (mg) One thousandth of a gram.

Molar The back teeth, used for grinding. Molars are the largest teeth in the mouth, with 2 or even 3 roots each.

N

Nerves Thin threads or strings that run from the brain to every part of the body and carry messages for feeling, pain or movement. There is a nerve, along with a blood vessel, in every root of every tooth.

Numb Without feeling; anesthetized. When teeth and the gums around them are numb, they cannot feel pain.

Nutrition The mixture of foods the body needs to grow, be healthy, and fight off disease.

O

Occlusal The biting surface, or top, of the tooth.

Oral Of the mouth. An oral medicine is one taken by mouth.

Organisms Living things (animals or plants).

P

Palate The roof or top part of the mouth.

Permanent filling A filling using a special metal or ceramic material which lasts for years.

Permanent teeth The 32 adult teeth which grow into the mouth to replace the baby teeth.

Petroleum jelly (petrolatum, *Vaseline)* A grease-like jelly used in preparing skin ointments.

Plaque A film or coating of germs that can form on the teeth, mix with food and make acid. You cannot see plaque unless you stain it.

Plate A set of false teeth.

Premolars The teeth between the molars and the canine teeth; bicuspids.

Prenatal Before birth.

Prevention Action taken to stop sickness before it starts.

Probe An instrument for examining teeth for tartar or other problems.

Protective foods Foods that are rich in vitamine and minerals. They help build healthy bodies and make people more able to resist or fight diseases. In this book they are called GLOW foods.

Proteins Body-building foods necessary for proper growth and strength. In this book they are called GROW foods.

Pus A yellow-white liquid found inside infections.

R

Records, reports Written information about sick persons and the treatment they receive. Records are for the personal use of the health worker, reports are written by one health worker to another to describe an illness and ask for further treatment.

Resistance The ability of something to defend itself against something that would normally harm or kill it. Many bacteria become resistant to the effects of certain antibiotics.

Rinse To hold a liquid in the mouth, moving around inside the mouth.

Risk The possibility of injury, loss, or harm. Danger.

Root The lower part of the tooth, under the gum, connected to the bone.

Root canal The hollow part of every root of a tooth, which has a blood vessel and a nerve inside,

Root canal treatment A special operation on a dead tooth to remove material from the root canal and replace it with filling material.

Root fibers Tiny fibers which hold the root of the tooth to the jaw bone.

S

Saliva Spit. Saliva helps us to swallow our food.

Scab The crust of dry blood that forms over a wound.

Scale To scrape the tartar off the teeth. A **scaler** is an instrument for scaling.

Scientific method A way of learning something. It begins with information, then an idea, and then the idea is tested against the information available.

Side effects Problems caused by using a medicine.

Signs The things or conditions to look for when you examine a sick person, to find out what sickness the person has. In this book the symptoms (the problems a person feels) are included with signs.

Sinus A hollow place inside the bone.

Socket The wound left after you take out a tooth.

Soft drinks Fizzy, carbonated drinks like Coca-Cola.

Spatula An instrument used for mixing cement for fillings.

Starches Energy foods like maize, rice, wheat, cassava, potatoes, and squash.

Sterile Completely clean and free from living micro-organisms. Things usually are not sterile until you boil them or steam them.

Sterilize To make things sterile by boiling or steaming for 30 minutes.

Sugars Sweet foods like honey, sugar, or fruit that give energy but often cause tooth and gum problems.

Survey A collection of facts about a small group of persons or things in the community. If the small group is not unusual, the survey results will describe the whole community.

Suture A stitch made with needle and thread to sew up an opening or wound.

Swelling An area of the skin that is abnormally large, puffed up. A swollen area is one that has swelling.

Symptoms The feelings or conditions that sick persons report about their sickness. In this book, symptoms are included with signs.

Syringe An instrument with a small sharp needle, for giving injections.

T

Tablespoon A measuring spoon that holds 3 teaspoons or 15 ml.

Tartar A hard, rocky coating on the tooth near the gums, also called calculus or toothstone. Tartar forms when old plaque mixes with calcium in the spit.

Teaspoon A measuring spoon that holds 5 ml. Three teaspoons equal one tablespoon.

Teething The action of new teeth cutting through the gums. Also see **Eruption.**

Temperature The degree of heat of something, such as the air or a person's body.

Temporary filling A filling meant only to last until a permanent filling can be placed.

T.M.J. The temporomandibular joint. See **Joint**.

Tooth abscess See **Abscess.**

Tooth decay Damage to the tooth caused by acid; cavities.

Toothache Pain in a tooth.

Toothpaste A paste for cleaning teeth.

Tongue depressor A tongue blade; a piece of wood used to keep the tongue out of the way when examining or treating the teeth.

Top of the tooth The part of the tooth that bites on food. For both upper and lower teeth, the biting surface is the 'top' and the root is at the 'bottom'.

Topical On top of the skin. A topical medicine is put on the skin.

Traditions Practices, beliefs, or customs handed down from one generation to another by example or word of mouth.

Treatment Care given by a health worker to fight an illness, attend to an injury, or prevent a new problem.

Tropical Having to do with the tropics—the hot regions of the world.

Tumor An abnormal mass of tissue without inflammation. Some tumors are due to cancer.

Tweezer Small metal instrument for picking up cotton or small objects. Some persons use the word **forceps** for tweezers, but in this book, forceps are instruments for taking out a tooth.

U

Ulcer A break in the skin or mucus membrane; a chronic open sore that can appear on the skin, gums, or gut.

V

Vaccinations See **Immunizations.**

Vaseline See **Petroleum jelly**.

Vessels See **Blood vessels.**

Virus Germs smaller than bacteria, which cause some infectious diseases, like measles or the common cold.

Vitamins Protective foods that our bodies need to work properly.

Volume The amount of space a thing occupies. We measure volume in liters, ml, gallons, etc.

W

Weight The heaviness or lightness of a thing. We measure weight in kilograms, mg, pounds, etc.

Wisdom teeth The 3rd molars, which grow into the mouth when a person is 16-22 years old.

X

X-ray A special photograph that allows you to see bone, roots of teeth, etc., under the skin.

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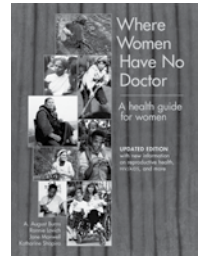
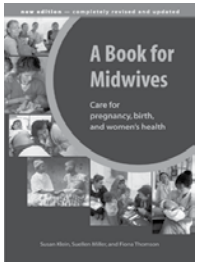
Other Books from Hesperian

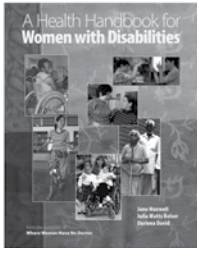


Where Women Have No Doctor, by A. August Burns, Ronnie Lovich, Jane Maxwell, and Katharine Shapiro, combines self-help medical information with an understanding of how poverty, discrimination and culture can limit women's health and access to care. This book is essential for any woman who wants to improve her health, and for health workers who want more information about the problems that affect only women or that affect women differently from men. 588 pages.

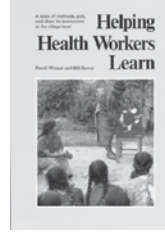


A Book for Midwives, by Susan Klein, Suellen Miller, and Fiona Thomson, revised in 2004, is for midwives, community health workers and anyone concerned about the health of women and babies in pregnancy, birth and beyond. It includes: helping pregnant women stay healthy, care during and after birth, handling obstetric complications, breastfeeding, and expanded information for women's reproductive health care. 544 pages.

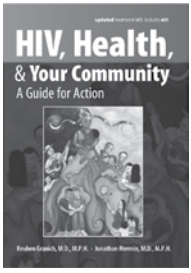
Where There Is No Doctor, by David Werner with Carol Thuman and Jane Maxwell. Perhaps the most widely used health care manual in the world, this book provides vital, easily understood information on how to diagnose, treat, and prevent common diseases. Emphasis is placed on prevention, including cleanliness, diet, and vaccinations, as well as the active role people must take in their own health care. 512 pages.



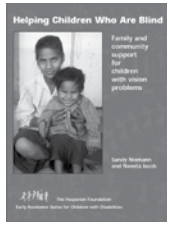
A Health Handbook for Women with Disabilities, by Jane Maxwell, Julia Watts Belser, and Darlena David. Women with disabilities often discover that the social stigma of disability and inadequate care are greater barriers to health than the disabilities themselves. This groundbreaking handbook provides suggestions on daily care, family planning, violence and abuse, pregnancy and childbirth, drug interactions, and more. 384 pages.



Helping Health Workers Learn, by David Werner and Bill Bower. An indispensable resource for teaching about health, this heavily illustrated book presents strategies for effective community involvement through participatory education. Includes activities for mothers and children; pointers for using theater, flannel-boards, and other techniques; and ideas for producing low-cost teaching aids. 640 pages.



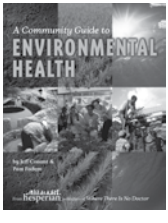
HIV, Health, and Your Community, by Reuben Granich and Jonathan Mermin, is designed for places with few medical resources, and accessible to people without technical knowledge or prior training in HIV prevention or in the care of people with HIV. Topics include: biology of HIV, prevention strategies, counseling and testing, low-cost care, and guidelines for using ART and treating opportunistic infections. 248 pages.



Helping Children Who Are Blind, by Sandy Niemann and Namita Jacob, aids parents and other caregivers in helping blind children develop all their capabilities. Topics include: assessing what a child can see, preventing blindness, moving around safely, teaching common activities, and more. 192 pages.

Helping Children Who Are Deaf, by Sandy Neimann, Devorah Greenstein and Darlena David, helps parents and other caregivers build the communication skills of young children who do not hear well. Covers language development through both signed and spoken methods, assessing hearing loss, exploring causes of deafness, and more. 250 pages.

Disabled Village Children, by David Werner, covers most common disabilities of children. It gives suggestions for rehabilitation and explains how to make a variety of low-cost aids. Emphasis is placed on how to help disabled children find a role and be accepted in the community. 672 pages.



A Community Guide to Environmental Health,
by Jeff Conant and Pam Fadem, helps urban and rural health promoters, activists, and others solve environmental problems to improve health. 23 chapters with dozens of activities and instructions provide information about reducing harm from pollution protecting water and watersheds, farming sustainably, solid and health care waste, and more. 600 pages.

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